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THE EDITOR'S PAGE

Research Communication: Problems and Prospects

Changes in research communication arising from the use of technology will continue and are inevitable according to the *Report of the Task Force on Technology and Communication.* However, the change will not be so rapid as to be overwhelming, and the rate of adoption will vary by individuals and disciplines.

This state of affairs leads the task force to the view that those affected and involved will have time to address the important human, technological, economic, moral, ethical, and policy issues and concerns identified in the report. These range from cost-benefit and systems compatibility considerations to questions about the ownership of intellectual property, access to information, and quality control. The way such issues are resolved will determine the shape of things to come. A more immediate strategy for improving significantly the efficiency of the research communication process is also advocated. It involves focusing on cost-saving applications of technology as well as on the potential of technology to increase quality and productivity. Seventeen recommendations are offered to facilitate implementation of this strategy and resolution of the longer-term issues.

Of particular interest to researchers in education is the recommendation that SSHRC support *applied and policy-oriented research* concerning the use and impact of technology on research communication. An annual program budget of $500,000 for five years is proposed for this purpose. A related recommendation calls for more encouragement of scholarly studies about the impact of new technology on the Canadian research community and on Canadian society in general. If implemented, these proposals would create opportunities for us to discover how to communicate more effectively with each other and with persons engaged in professional practice. More effective and efficient communication would also result from action by SSHRC on the recommendation that program regulations in all research support programs be amended appropriately to allow for purchase or rental of equipment (hardware and software) and for payment of on-line and connect charges associated with dissemination of interim findings or collaboration in the design and carrying out of research projects.

It is important that the strong support of the education community for at least these three recommendations of the task force remain visible in the months ahead. We must continue to articulate our interests through every channel possible, including using our connections with persons involved in the decision making structure, for persistence pays in the corridors of power and self.

W.H.W.

Second in a two-part series based on the *Report of the Task Force on Technology and Research Communication* (1987). Ottawa: Social Sciences and Humanities Research Council of Canada.

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Program Implementation and Experienced Time

Understanding the teacher's experience of time during program implementation is the purpose of this study. It is based on an analysis of interview transcripts from 20 primary grade female teachers in 15 schools across two adjacent urban districts in British Columbia. They were implementing a mandated reading program. The findings indicate that teachers experience various tensions between fixed-time (as defined by timelines, schedules, and the clock) and lived-time (as defined by their engagement with the task at hand). They attempt to resolve these tensions through their choice of when and how to initiate implementation; prioritizing their use of time and seeking extra time by means of short-changing other areas of the curriculum, integrating two or three subjects, and lengthening the workday; modifying the innovation by selectively using parts of it; interpreting current implementation difficulties in the context of the next time the innovation would be used; and by discussing problems of time with colleagues. The article not only illustrates time tensions and their resolution, but it also draws some implications for planning implementation projects and accompanying teacher inservice.

Our program implementation knowledge and strategies largely rest on common sense. As educators we share a body of belief about the purposes of schooling and about how schools work. Not surprisingly this consensus makes discussion about change possible and permits many things to be taken for granted when implementation is planned, evaluated, or even researched. Unfortunately, though, some of the fundamental categories of classroom life thereby may remain unquestioned, or when discussed, are at best glossed. Such is the case with *time.*

> *Implementation requires time to become familiar with the variety of materials that are available, how to apply them in your classroom, getting into the habit of using things that you haven't used before, and seeing whether they would be suitable. This takes time.* (Teacher comment)

That implementation *takes time* seems terribly obvious, and perhaps for this reason the study of change from this perspective is not well developed. By definition implementation is "a process, not an event," says Fullan (1982, p. 41), and yet a "time perspective is one of the most neglected aspects of the implementation process" (p. 68). Reports on implementation often detail the amount and organization of time associated with projects and document how teachers need time for planning and learning to use innovations. Rarely, though, is the *meaning* of time considered from the point of view of the teacher's *experience* of change, and there is little discussion

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about the implications of this meaning for inservice. This lack is curious and somewhat surprising because implementation centers on the teacher.

Of course there are various conceptions of program implementation (House, 1981; Loucks & Lieberman, 1983). But for purposes of this article I am adopting Fullan's premise that there are both subjective and objective dimensions to a teacher's experience of change. Much is written on the multivariate and objective dimension (such as identifying those factors and procedures that enhance implementation planning), whereas less attention is given to the subjective meaning of change: "Neglect of the phenomenology of change—that is, how people actually experience change as distinct from how it might have been intended—is at the heart of the spectacular lack of success of most social reforms" (Fullan, 1982, p. 4). Perhaps part of the reason for this neglect lies in Fullan's further observation that

> we have become so accustomed to the presence of change that we rarely stop and think what change really means as we are experiencing it at the personal level. More important, we almost never stop to think what it means for those others around us who might be in change situations. (p. 24)

Understanding change from the point of view of the teacher's experience leads one directly to the topic of time (Fullan, 1982; Lieberman & Miller, 1984; Lortie, 1975; Sarason, 1971; Wolcott, 1977).

My purpose here is to argue that the teacher's experience of program implementation needs to be considered from at least two time frames.[1] Inevitable tensions between the frames define the meaning of time for teachers during program change, and bringing about some kind of resolution is a feature of their accomplishing implementation. This argument is illustrated with data taken from a 1981 study of teachers implementing a new reading program (Pike, 1981).

Method

Participating in the study were 20 full-time primary grade teachers (female) in 15 schools across two adjacent urban districts in British Columbia. They were implementing the *Reading 720 Program* (Ginn & Company, 1979) for the first time. This innovation is a commercially produced and self-contained package consisting of rather prescriptive teacher guidebooks, student texts and workbooks, and various other instructional and assessment materials. The sequenced lessons and directions for evaluation are explicit. It was mandated by the school districts and followed up by two district-wide inservice sessions conducted by district curriculum consultants. Some schools provided teachers with professional development time every two months for preparing and sharing student materials. Also, the district consultants were available to help individual teachers with their implementation planning and problems.

The teachers were recommended by two curriculum consultants in each district whose responsibility it was to provide the inservice training and to work with teachers on this new program. (This method of teacher selection was a condition set by the school districts for doing the study.) These identified teachers agreed to be interviewed at least three times for a total of up

to two and one half hours each during the last three months of the school year. There were no group interviews. These selection criteria meant that the interviewees had certain characteristics in common. They were viewed favorably by the district consultants as having an ability to reflect on and articulate clearly their experiences, concerns, and problems with the implementation and were not perceived to be those who resisted the change. They were a select group and did not represent the range of teacher characteristics and attitudes that might be expected in any large school district.

Because the purpose of the interviews was to clarify the meaning that teachers gave to their own experiences of program change, the teachers' points of view were highlighted and respected in the data collection and analysis. Thus the study did not begin with an assumption that time was (or ought to be) a major theme in implementation. Rather than starting with a fixed hypothesis, the research began with open-ended questions that could become focused more narrowly in later interviews. These questions were suggested by a review of selected phenomenological writings (Greene, 1973; James, 1904; Schutz, 1970, 1975) concerning how we experience change in our everyday world, and by literature that purported to discuss program change from the teachers' view (Lortie, 1975; Ponder & Doyle, 1978; Sarason, 1971; Wolcott, 1977). Four categories of questions were devised to guide the initial interviews: (a) What were your *anticipations* of the change experience, and how did these anticipations match your actual experience? (b) What *factors* (e.g., events, sources of help, decisions, expectations, and people) both inside and outside your classroom influenced your experience of change? (c) What *problems* or difficulties characterized your experience, and how were they dealt with? (d) Was there anything else that *you* considered important to your experience of change? The point of starting with general categories was to allow the teachers freedom to define their own experiences in terms of what they considered to be salient. This format provided scope for discussion in order to produce a transcript which could then be used for more specific questioning in follow-up interviews. All questions and the conversational style were piloted with three teachers who were not a part of the study group, but who were undergoing the same program change. Their taped comments helped to clarify and ensure that the questions would be relevant to teachers undergoing the implementation. All interviews were conducted by a primary school teacher who was doing graduate studies in program implementation; she had not used this innovation and so did not bring to the interviews preconceptions based on any experience with it.[2]

Fourteen of the 20 teachers (seven from each school district) were randomly selected to be interviewed individually. Two weeks prior to this interview each of them was mailed a copy of the questions and was told that the purpose of the study was to make explicit the meaning that she gave to her own experiences of change. Any questions they had about the study were discussed. Because each of them had given thought to what she wanted to say, there was no difficulty focusing on the topic during the taped interview of up to 45 minutes that was conducted in their schools. Each one was

asked to elaborate comments that lacked detail and to clarify statements that seemed ambiguous. The tapes were subsequently transcribed.

A second interview of up to one hour was conducted with these 14 teachers individually after a couple of weeks. Each was asked to read her transcript of the first interview and to reflect on its adequacy, to make any changes to the text if she so wished, and to provide any further clarification and information that she desired. The reason for this procedure was that they may have reconsidered what they said during the first interview or may have thought about something new that was important to add. By reading her own words, a participant could judge whether the text communicated what she wanted to say. Each one thus controlled her own transcript and enhanced its validity from her own point of view. At the same time any data which were not clear to the interviewer could be probed further and mutually clarified. When these modifications and elaborations were recorded the 14 transcripts were ready for a first analysis.

The analysis began as the transcripts were read by both the interviewer and researcher in the light of the question: What common themes characterize these experiences of program implementation? Themes referred to those features of the change experience that all of the interviewees highlighted. (Shared rather than idiosyncratic themes were sought because producing 14 case studies was not the purpose of this study.) Within each transcript the themes were identified and then compared across the transcripts. In this way six common themes were defined. Experiences of change were influenced by: (a) discussions with colleagues, (b) student responses to the new program, (c) the quality of various kinds of district and school support, (d) teacher beliefs about the classroom and the subject matter, (e) the nature of daily classroom planning and activities, and (f) time. They all spoke of the organization of time as being problematic during program change.

The third taped interview of up to 45 minutes allowed the 14 teachers to respond individually to a written summary of the six themes, together with supporting examples from the transcripts and an explanation for how they were defined. Because the themes were abstractions from the transcripts, each participant was given an opportunity to question and further discuss them. At this point the remaining six teachers (from one of the districts) who were not involved in the first two data gathering interviews were now interviewed individually to seek confirmation of the themes. They were asked to discuss and to judge whether these themes adequately interpreted their own implementation experiences. This provided a further check on the study's intention to take seriously the teachers' perceptions. Validity in the study thus depended on all 20 teachers being given the opportunity to recognize and clarify their experiences in the themes (Psathas, 1973; Werner & Rothe, 1980). The interest was in their experiences rather than in a fictional world of the researcher's own making. In this manner the participants highlighted time as a major problem characterizing their attempts to use the innovation.

Confident that time was central to their experience of implementation, the researcher then analyzed the transcripts in greater depth to determine why time was perceived to be problematic. For purposes of this analysis, time was defined as one's "sense of duration" from the point of view of two frames: fixed-time and lived-time (Greene, 1973; James, 1904; Schutz, 1970). These frames were brought from the literature to the data, and the analysis focused on the experienced tensions between these frames and their mediation in the teachers' work. The categories of "tension" and "mediation" were in part an artifact of bringing the two frames to every reference to time in the transcripts. The questions that guided the analysis were (a) What tensions did teachers experience between fixed-time and lived-time? (b) In what ways did they attempt to resolve the tensions? These questions allowed for some insight into the experience of program implementation from the perspective of time.

Time Frames

The first frame has been called *fixed-time, public-time, or objective-time.* Here our experience of time is organized by fixed reference points that give it an objective reality external to the individual. Our sense of the past, present, and future is rendered public and orderly through calendar-time, clock-time, timetables, timelines, schedules, target dates, and deadlines. These categories allow us to standardize our experiences, to synchronize plans with other people, to provide a basis for evaluating the efficiency of what we do, and to make our activities accountable. No one is immune to these effects, as illustrated by Ott's (1980) analysis of the clock within our lives:

> Among the essential features of clock-time are sameness; repetition; the ordering of experience into chronological slots of past, present, and future; and finitude. The present is conceived as a quickly moving dot measured in micro- seconds which speeds up as the dissections of the movement become increasingly finer.... Clock-time encloses. It is the standard reference for activity. It prevents one from moving too fast or too slowly.... Besides encouraging sameness, clock-time orders experiences into a neat recordable structure. It spans its whole realm with a serialization of minutes, hours, days, and years. Each moment of the past, present and future is thereby made amenable. No moment escapes. (pp. 59-60)

Fixed-time is integral to one's experience of change and is the very basis of planning. It is particularly the point of view of the curriculum developer who may be responsible for initiating change and of administrators who conceive implementation along timelines and think of successive stages or levels of program use (Leithwood, 1982). Those who manage change across a school district, for example, may decide to initiate implementation on September 3, to schedule a three-hour teacher inservice session on October 10, another on January 7, and then to allocate resources and anticipate certain kinds of outcomes. If there are difficulties with implementation, fixed-time is adjusted administratively on the assumption that flexibility means the compressing or lengthening of timelines as necessary. This manipulation of time provides benchmarks for judging the success of implementation, and for the teacher defines expectations about covering a certain amount of

material by a given time. Teachers, fully aware of the difficulties inherent in using someone else's prescription in their classrooms, recognize the inevitable pressures of time restrictions. Precise and invariant units, such as an 80-minute class period, a two-hour preparation session, or a four-day unit of study, while making the measurement of time possible, define important constraints on learning and teaching. Quite simply, fixed-time is recognized as an important variable in the planned success of program change. But the experience of time goes beyond the bounds of this frame.

The second frame can be called *lived-time* or *subjective-time*. Both James (1904) and Schutz (1970, 1975) compare our sense of "inner duration" with the flow of a river; it moves through consciousness, not with the routine regularity and evenness measured by minutes and hours, but with a continuous flux that defines the ever-present Now.

Within this frame, time has an amazing elasticity. We speak metaphorically of time that drags, crawls, flies, slips away, rushes along, stretches, and is consumed, as Langeveld (van Manen, 1978) illustrates so well in the child's encounter with the school clock:

> The clock of the adults says: "It is five minutes past nine!" The child looks at the clock reproachfully. As a child you can grimace at the clock because the latter is no longer an indifferent object. The clock is telling you that things are going wrong. It says: "you are going to be late." Suddenly the life of the present turns thin and pauperish; the child is at wits' end. He is now in the fourth dimension of "being late." Will he get punishment? Time stretches, stretches, stretches until the school principal, the god of time, says "All right then—go to your class...." Suddenly we are back in ordinary life; the experience of the present opens up to the horizon again; the strangeness of the class which had begun to work already is quickly overcome and we are industrious and well-behaved. The morning goes by fast. The clock cooperates, the hands don't get stuck on the face of the clock. It is continuously "so late already," that is, "it is later already than I thought it would be." (p. 54)

Depending on one's immediate projects and interests, temporality has a variability that moves unevenly along many dimensions, such as slow or fast, routine or pressing, stretched or compressed, closed or open, full of anticipation or full of dread. When one is bored, time plods along so slowly; what seems to be 15 minutes is, according to the clock, merely three minutes. An hour slips away quickly or becomes dreadfully long, depending on how fully engaged one is with the task at hand. There is never enough time when one feels pressed by a deadline. When in a hurry, waiting for a bus seems like forever. In short, one's subjective experience is of the ebb and flow of time.

Greene (1973) says,

> Each person is to some degree aware of an inner time which differs from clock time, the intersubjectively accepted time of everyday reality. The person must adapt to standard time sequences throughout his life, but these sequences are never completely syntonic with the levels of inner temporality. (p. 134)

Herein lies the tension between the two frames during program implementation, as illustrated by the teachers' experiences described in the next section of this paper.

Tensions

> *I am in a time squeeze, having to make decisions quickly. I feel apprehensive and even hopeless because there is so much to learn in a short time. I'm just one step ahead of the kids. But we only have so much time. I can't seem to get organized. I feel pressed. I'm just too busy to do everything I should. There is a lot happening in a very short time.*

Implementation does bring out tensions between fixed-time and lived-time. The teacher has a foot firmly in these two frames, and it is within this stance that much of the frustration is located with implementing change. He or she works within the fixed-time parameters defined by the institution and the lived-time experiences of the participants. The events and social world of classrooms are organized around the clock and the seasons of semesters and days. And yet it is easy to forget that change is not accomplished over cumulative bits and pieces of clock-time, nor is it brought to fruition through an hour here and there across some months. There are times, rather, of immersion during teaching or planning when ideas come like a flood and insights flow within a few minutes, and other times when the program seems to move so slowly as to lose its very meaning. Understanding a new program requires the teacher literally to dwell in it for intensive periods without constant interruption from other demands. The tyranny of clock-time can run interference and play havoc with this pacing in a number of ways.

First, an obvious tension with fixed-time has its source in the innovation itself. Program documents and the strategies for their implementation, together with the school's organization, assume a notion of time that is objective, rationalized, and administrative in interest. As such, implementation is shaped by objective-time, not only as measured by the classroom clock, but also by the structure of the new program. Its lessons have an internal sequence in relation to each other, thus specifying for the teacher the correct order of events and how much emphasis is to be given them. This sequencing of topics or objectives may imply a step-by-step process of what to teach and when, and sometimes explicitly suggests the relative amount of time allocated to topics. Although materials have their own logic that holds them together from the viewpoint of their developers, a teacher may judge that it is not always possible or desirable to follow this structure within the constraints of the classroom. The resultant tension for the teacher is expressed typically as *I feel guilty because I have not gotten into the program in as orderly a way as it suggests.* The chronological serialing of teaching activities may be in conflict with the way one's classroom events unfold; the plan is never the experience. Depending on how this perceived tension is experienced, it may generate a sense of lost control over one's own time, and may produce considerable frustration and even some disorientation. In essence, this frustration occurs as lived-time is brought to focal awareness and when fixed-time can no longer be taken for granted in relation to changes in one's classroom routines.

Second, another tension with fixed-time has its source in perceived program demands. The dilemma, as one person expressed it, is that *there is*

so much suggested in the program for me to do, but the time disappears on me, and I don't have enough time to do everything that I want to do. The teacher is overwhelmed with the sheer amount of things that could be done because of perceived program demands that need to be articulated within the overall school curriculum and in relation to the ever-present timetable. Such tension is expressed as astonishment, frustration, and a sense of contradiction:

> *When I saw the teacher's manual and all the types of things that a teacher could do, I was really quite astonished; I thought that "If I have seven days a week and 15 hours a day, I can do it."*

Similarly, another teacher commented that

> *There were so many aspects of the program that I could see, and initially the problem was that of getting bogged down when I felt I had to cover everything ... I was frustrated because there was so much to do in the program and the day wasn't long enough.*

Faced with a discrepancy between how much time seems to be required and what amount is available, all participants experienced duration with feelings of being pressed, burdened, and overloaded. When there is not enough time one's sense of inner duration moves unevenly. Each new classroom activity is experienced with uncertainty because previous routines can no longer be taken for granted. One does not know "how long" an activity may take and "how much" time may be necessary to use unfamiliar materials. This confusion erodes a sense of smooth flow and reduces classroom life to a series of halting and even disjointed episodes. Until the program is taught once through, there may be little understanding of what its components entail for one's work.

This frustration with the structure and demands of a program is felt especially during one's early attempts at implementation. This is when time moves unevenly because of the sheer amount of things to be learned and done, and the uncertainty in pacing lessons:

> *There were times in the beginning—in the first few months—when I felt a tremendous amount of change happening. I was just ahead of the kids. Now it's coming better because I know what to expect and what is coming, but at that time I bogged down and needed more planning time.*

For participants this initial time is experienced and managed through "working slowly":

> *I find that I am working quite slowly and that I really don't have the time to do the phonics and get through the reading and mastery tests.... I went very slowly through the first book and developed it slowly. I'm not worried but I'm still going slow.... I'm going to speed up a little later as I become more familiar with the program. I'm hoping things are going to click and that we can then rush ahead.*

Working slowly in the classroom is the result of trying to simultaneously grasp what a program involves, sorting out doubts about how it may best be used, and trying to do an adequate job under such circumstances.

Third, it is not surprising that over the course of a teacher's attempt to use a new program there is a heightened awareness of time and its variable

tempo. This tempo recognizably shifts as one's experience with the new program accumulates. Before starting to implement, said one teacher, there was anticipation and a rationalizing of what *future time* would be like:

> *I saw myself initially taking some time to change habits and to get into using some of the material that I hadn't used before; I thought that initially this would take time but that it would soon become a part of my way of doing things.*

Once implementation is started, however, the initial experience involves considerable uncertainty:

> *I was undergoing the greatest amount of change in the beginning of the year ... when it was brand new for me; that was the hardest time. I had so much work to do and I seemed to be working one story ahead of the children. I had the feeling that I didn't know where I was going.*

But as participants gain familiarity with the program and use it with a greater sense of competence, they report a noticeable shift with experienced duration: *I find that the time seems to be moving along more quickly than when I first started using the program two and a half months ago.* There is the move from acute awareness of time *(I worked at my new materials all the time; just trying to familiarize myself with the program took time)* to the place where the same teacher says *I feel fairly comfortable with time now that I've worked with the materials for a few months.* Gradually time is no longer highlighted as classroom routines are established once again: *Having gone over the program, I am now familiar with its goals and I feel that I know where I'm going with it.* And as to the future there is the rather sober prediction that *after we have used it for three or four years, the program may become such a dull routine that we lose our enthusiasm.*

A fourth tension arises as the present is interpreted in the light of the past, and when the perceived success of one's current teaching is compared to last year "at this time." In the following comments time is brought to the fore clearly in relation to "the time before":

> *Classroom management ... is very time consuming and I'm not getting the same kinds of results with students that I had in the past by this time of year. I feel terribly bogged down.*

> *I felt frustrated around Christmas because I knew from past experience what the children had been able to do by this time and now I wasn't perceiving the same progress.*

Parents are also a source of comparing the present with the past, as one teacher discovered:

> *I had parents comparing their child's progress in grade one with that of a child who had been in grade one last year, and saying "My goodness, by December my Johnny was reading all kinds of things, and this year my Tommy doesn't seem to be learning to read very well"; I remind them that we are using a new program and it goes much more slowly.*

These comparisons with the "last time" are tied to parents' and teachers' expectations of children's progress; only as they see explicit student benefit is the time spent on the innovation deemed worthwhile despite the frustrations. Time becomes oppressive when its enormous investment in im-

plementation activities does not seem to have the expected pay-off in student learning:

> *My preparation was very time consuming and I was trying to rush in the classroom. I slowed down because the students weren't reading as quickly as with the former program. I felt we were wasting time because the new program wasn't working as the old program had in the past, and student progress didn't appear to be as good as in the past.*

Because the demands of fixed-time are rarely synchronized very well with inner-time, the quality of implementation itself may be affected when there is considerable tension between the frames. On the negative side the tension may shape adversely the teacher's relations with the students, and modification of significant classroom values may occur. Implementation may then take place around the constraints of fixed-time more than around questions of purpose. For example, as one interviewee concluded, *I found that I couldn't offer the children enough time in the day, and I didn't have the time to do as much as I would have liked ... or to develop any of the enrichment ideas.* Positively this tension reminds teachers that they are not the only ones who experience time pressures; so do the children in the schools. Recognition of this mutual experience provides an opportunity for teachers to discuss with students the difficulties associated with change. For both teachers and students, mediation of their immediate time tensions is a part of achieving program implementation. The following section of this paper illustrates how teachers do bring resolution to this problem.

Mediation

> *I didn't feel comfortable with the program right away because for all of us it's been a learning process as the year has gone on. We are working with things that are brand new. Preparing those materials, reading the stories and keeping ahead of the children in the book, all in a space of a year, that in itself is a challenge.*

Mediating tensions becomes a feature of program implementation for teachers. At one extreme are those who downplay the pressure of fixed-time: *The time is mine and I decide what to do with it.* On the other side, some teachers feel a loss of time control and admit a need for help to establish once again a sense of instructional sequence: *I'd like something programmed in steps and stages.* Somewhere between these extremes, however, are various ways to mediate disjunctures between the time frames.

Initially teachers come to terms with the demands of fixed-time through their choice of when to initiate implementation. Even though a district makes the decision to adopt the innovation, this does not imply that teachers are implementing that decision immediately in their own classrooms. Timing one's *entry* requires decisions about when and how to use a new program. For example, some teachers delay entry up to three or four months to ensure adequate preparation time, the availability of necessary materials, and more importantly, to watch what colleagues are doing and to learn from the problems they encounter. This strategy of "wait and see" allows them to grasp more fully what the change means in practice and to an-

ticipate classroom modification through better planning. While waiting, the following respondent used this lead time to teach students some of the things she assumed were related to the innovation:

> *I refused to start until the program was organized and all the materials were available. I'd made a conscious decision about when I'd begin the program and I didn't start the program until November.... I didn't even start looking at it until then. There were things I wanted to do first with the children in the way of research skills, outlining, paragraph writing, and so forth.*

In contrast to this delayed entry, other teachers try to use the program fully from the beginning of the school year, believing that the best way to implement is to jump into the change immediately: *I think I was the only one in the whole school that started right away with the program in September; the materials were here so I started right in.* They do this knowing full well that there would be initial confusion as they muddle through the program and that the time demands would be intense. Immersed in the change they find, as expected, that there is never enough time to do everything that seems necessary, but they expect that as time goes on they will achieve a greater sense of stability:

> *In September I completely changed over the way I did things in the reading program.... When I first started using the program, it was a great change that put much pressure and strain on me, having to make a whole new set of materials.... I really worked a long time and was floundering a little.... There was exasperation at the beginning when I had to get things rolling so quickly with decisions regarding materials.*

Others are more cautious, starting gradually with the new program and making decisions along the way about what aspects of the innovation would be used. Over the course of a few months or the school year they phase in implementation by dealing with change incrementally, thereby bringing the two time frames into closer harmony. For example,

> *I haven't really delved into the program deeply in the sense of having gone through and followed all of its facets. I've used parts and others I haven't because there are so many different elements involved, because of my lack of energy, and because some of the things in the program I haven't liked that well nor been convinced that they are that great. I've chosen not to do those things. In the future I will get into the program more deeply, but right now I'm holding back. There are other things that take my time.... I'm taking it slow and easy instead of getting in a hurry or dashing right into it, partially because I felt that the way I was doing things was adequate.*

This decision to implement slowly may be made by an individual for his or her own reasons quite independently of what peers are doing in the school or across the district. On the other hand a group of teachers may collectively choose (or have the choice made for them) to work together on a common timeline for phasing into the program:

> *We (at the school) didn't initially adopt the whole program.... We are doing implementation sequentially over a longer timeline. When we are finished, each teacher will have a complete packet of information and teaching helps. We have gone through the program slowly.*

The point illustrated by these examples is that teachers mediate time tensions somewhat differently through defining entry time. No one of these entry procedures is necessarily better or worse, except that this variation

may conflict with the fixed-time of administrative timelines. When implementation is administered only from the perspective of objective-time, standardization of entry is assumed as well as the illusion that teachers experience time in the same way within their classrooms. Neglected is the evidence that they may deal with time in dissimilar ways.

There is a second avenue through which time tensions are mediated. When faced with not enough time, teachers prioritize their use of time and seek "extra time" in a combination of ways. Commonly more time is found by short-changing other areas of the school curriculum: *I cut down the time used for science, social studies, and music; for these subjects I spend minimal time on the basics.* The time taken from these subject areas is used then for planning and teaching the new program. On the other hand, rather than set up competition for time among subject areas, some teachers seek more efficient use of time by "integrating" two or three subjects:

> *At first the program was totally new and I was spending time on it, and this was affecting my other areas of the curriculum. It was taking the time away from developing these other areas. I tried several different approaches to integrate the other areas in this new program but I wasn't satisfied—I was doing a hit-and-miss job. Also, the children were used to blocks of time—this is reading, this is language, this is spelling, and so forth—and they would ask "when do we do language?" Because the language and reading were integrated the children were not recognizing it as language.*

However, as this quotation indicates, this option proves to be a difficult one (for students also) during the first year of implementation, for if integration is to occur the new program has to be understood in a way that comes through actual use. When using the program the second time the teacher has the kind of familiarity that allows for adaptation of goals and lesson sequencing in the light of other subjects and student needs. For all teachers, of course, extra time necessary for planning is also to be found outside the bounds of the school timetable:

> *The only way I can survive is to take the materials home over the weekends ... I take three or four hours on the weekend to really know my work, then during the week I can adjust the program because I have that preparation behind me.*

Timing one's entry and seeking extra time are accompanied by adjustments to the innovation itself. Though initially overwhelmed when faced with an entire program, teachers become selective about what materials would be used with children and when. They quickly prioritize their own implementation activities, and this is perhaps the most important way of dealing with time when all perceived demands cannot be satisfied at once. The following quotation highlights this form of time management:

> *Time was a really big factor when I was beginning the program, not just time in the classroom, but my own preparation time. The amount of time I used to prepare was phenomenal. Now I'm not spending as much time as I did at first; I'm learning to pick and choose what I'm going to do instead of trying to cover everything at this particular time.... The program started going more quickly because I was not trying to do all of it. There was a little more speed and flexibility in my program as I learned about it. We started clicking along instead of being stodgy and thinking that I've got to get through this and that. I relaxed and that made everything go better.*

The grounds for selective implementation and for prioritizing the use of classroom time are related to student reaction to the materials and their perceived effectiveness for student benefit, the ready availability of resources, and the teacher's beliefs about what "works" and what does not. For example,

> *I choose not to cover all of the material because of time. My past experience and the time available to me guided by selection, and the fact that I know what I want to cover by the end of the year.*
>
> *There are things that you can spend a great deal of time on if you are not careful. Decisions have to be made about how to spend time and you have to be very selective in the materials you use. For example, I don't think I should be spending a lot of time doing vocabulary drill work with the children; those things can be cut out. I spend time on discussion of the stories.*

However, it is difficult to prioritize until one has some familiarity with the innovation that comes with actually using it, despite one's initial doubts about its benefits for classroom practice. Increasing familiarity with one's students over the course of a year becomes a basis for pedagogical decisions about what will be done, when, and how:

> *At the beginning I thought, "Oh my goodness, will I be able to cover all the material as thoroughly as I want to?" I'm now at the stage where I feel more comfortable with the program; I'm more selective in what is important for the children at this time because I know my children better now than I did in September. I have more confidence with what I know that they can do and can't do, and what they need most. Initially I looked at the program like the beginning teacher who wants to do a good job and thinks "I must do everything, every page, and make sure that they have been covered thoroughly." But when you get more confidence in what the children know, you feel more comfortable leaving things out, not in a haphazard fashion, but because you know your children well.*

Fourth, the tension is mediated also in part through a sense of the future. The teacher experiences the present in terms of the immediate past and what he or she anticipates of the future. They see "this" instructional activity in the light of "those" other activities already completed or yet to come. On the basis of past experience, anticipations are formed about "when I do this again," with attendant feelings of hope and greater control: *Next year I'll supplement with other materials and be able to do more; I've just taken each day as it comes and prepared what I needed for my next day.* This notion of "next year" holds promise when compared with the present, but this promise is not the same for all teachers. Some are certain about the promise (*Next year I will use all aspects of the program ... I will feel comfortable using it next year after I've thoroughly familiarized myself with the materials that I have at hand now*), whereas for others their hope is couched tentatively *(Maybe it will be better next year; I may get better results.... The next year around perhaps things will be a little smoother).* For everyone such talk of "the next time" is a recognition that although the past may not have gone well, the future has open horizons and some optimism is thereby possible.

Lastly, the tension is mediated as teachers come together and through discussion develop a sense of *intersubjective time* that cuts across the

variances of personal inner-time, thereby forming a basis for the shared Now. By means of reflection that comes through dialogue, they synchronize their experiences to some degree and give them a more or less common interpretation. Implementation is facilitated in various ways by such talk, not the least being that it obviously provides immediate comfort value as one's own past experience is validated:

> *I find it helpful to talk with colleagues.... If you have a problem or if you are fed up, it's consoling to hear that someone else is fed up as well. I learned from talking with other teachers not be be discouraged when you reach the point where you say "there is so much to do here and I can't do it." We shared our concerns about the program.*

Peer discussion is recognized as important because it allows teachers to clarify their expectations and focus their concerns arising from change. Not surprisingly their talk is used to raise the mutual problem of time itself, and it also provides ideas for what can be done the "next time" in the classroom:

> *One of the things that was helpful and that I'd like to continue is getting teachers together to discuss their problems with the program and pooling ideas on how they had overcome these problems. For example, we sat around for an hour discussing the problem of time—the fact that we were taking too long to complete particular parts of the program.*
>
> *We discuss what we are doing and what things work well. Before there wasn't the need to communicate as there is now. We help each other with ideas about covering the material.... I modified my use of the program the more I learned about it and the more I discussed it with other staff members. It would be terrible to implement a new program and feel that you didn't have anybody that you could discuss it with.*

Thus implementation is in part a social process of talking in which participants interpret the innovation in the context of their own educational beliefs, biographies, and ongoing classroom activities and concerns. Whether through informal talk or planned discussion sessions, teachers identify the elements of change essential to the new program in comparison with old practices, and mediate the time frame difficulties that the change highlights for them. Also, through talking with colleagues they build a common bond of understanding by defining their problems and the responses they deem appropriate. In this way they "take charge" once again of their own classrooms after the initial disruption brought on by the program change. Professional confidence is reestablished through such solidarity.

Discussion

The teachers' experiences and sense of duration during program implementation can be understood through two frames. Fixed-time represents objective, precise, and invariant units of duration as measured by the clock, calendar, timetable, or schedule. By means of these public reference points teachers anticipate and plan change, organize classroom activities, coordinate projects with colleagues, and judge the effectiveness of their work. Lived-time, however, is defined by the teachers' sense of inner duration in the ongoing flow of consciousness. They have an awareness of time's variable tempo marked by the demands of their expectations and interests and by the quality of their engagement with the task at hand.

When talking about this experience of duration from either frame, the teachers use a common stock of metaphors. (It would be difficult for anyone to discuss their experience of time in a taken-for-granted manner except through an array of metaphors provided as appropriate within ordinary language.) The following brief analysis of two metaphor clusters follows some of the work of Lakoff and Johnson (1980), who argue that "our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature" (p. 3).

There is one cluster associated with talking about the experience of objective-time. Time as a *commodity* "is a kind of [abstract] substance that can be quantified fairly precisely, can be assigned a value per unit, serves a purposeful end, and is used up progressively as it serves its purpose" (p. 66). Thus during program implementation, time is experienced in terms of amounts—blocks of time, enough time, too little time, extra time, available time, more time—that could be arranged and controlled in accordance with the teacher's or administrator's needs. As a *limited resource*, time can be managed wisely, conserved, wasted, given away, lost, used up, taken away, provided, shared, run out of, or put to good use in the service of accomplishing implementation. Time as *money* means that it can be spent, saved, amassed, budgeted, short-changed, borrowed, or stolen; it can be invested for expected pay-off, or it can be squandered with little regard for consequences. Time is also talked about as a *container* whose boundaries encompass the events of program change ("I did the activities in three hours," "It took me two months to plan"); within these larger or smaller sized "containers" the teacher experiences and organizes implementation. Metaphors such as these treat time as discrete units of duration that may be measured, rearranged, amalgamated, or divided into appropriately sized blocks so that classroom work can be planned and its success judged in relation to projected target dates, timelines, and schedules. Implementation problems are seen to be solvable in large part by manipulating these amounts of time. Although these metaphors are coherent with each other, they obviously hide other aspects of the teachers' experiences of time.

Another cluster of metaphors highlights time as *movement*. The teachers speak of it as a *moving object* which flies, passes, speeds, or drags by them. The future moves toward the teacher ("The time will come ..." "When the time arrives ..." "Coming up in the future ..." "In the weeks ahead ...") and then recedes behind her ("The time has gone ..." "That's behind me now"). She may move through time toward the future ("As I go through this year," "The closer I get to Christmas I will ..."), or move through a series of *ongoing episodes* each having beginnings and endings. Sometimes these classroom episodes appear to have little relation to each other, and implementation is experienced as disjointed and somewhat random ("My activities were not related very well," "The unity was lost"). Time is also a *liquid medium* which can be squeezed or stretched, and which moves slowly, rushes along, bogs down, and can be held back in relation to one's expectations and interests. One can "jump right into" this flow and be immersed. These metaphors are coherent because they highlight the moving qualities

of duration—its ongoing and process character in relation to a teacher's concerns and goals—rather than the qualities of measurable amounts and discrete units.

Such metaphors are not merely poetic devices, nor are they arbitrarily chosen by teachers.[3] Fixed-time metaphors are deeply rooted in ordinary language and our cultural orientation. For example, time as "money" or a "resource" are taken-for-granted concepts across the industrialized world. Everyday experiences with money and resources are used to conceptualize, organize, and talk about time as a valuable and even scarce commodity. We assign value to commodities as we use them to achieve our purposes. Not surprisingly, then, program implementation costs extra time, and there is never enough of this limited resource to use on what teachers want to accomplish in the classroom; they see themselves as actually spending, losing, wasting, borrowing, and running out of this "thing" called time. On the other hand, the metaphors associated with lived-time tend to be rooted in our body experience. We experience physical objects in part in terms of a spatial orientation, for example, as being to the front, above, below, behind, or to the side of us. We often speak of moving (quickly or slowly) toward objects that are in front of us, and away from the objects that are behind. Such orientation and movement in the physical world is relative to the position of our body and gives rise to spatial concepts that metaphorically structure some nonphysical experiences such as of duration. "By virtue of the 'time is a moving object' metaphor, time receives a front-back orientation facing in the direction of motion, just as any moving object would," conclude Lakoff and Johnson (1980). "Thus the future is facing toward us as it moves toward us," and the past is behind us (p. 43). The language that teachers bring to their experience of program change often portrays this conception.

The importance of recognizing these metaphors goes beyond an understanding of how teachers talk about time during program implementation. The very metaphors they use may shape their experience of change and may serve to guide their actions and attitudes toward it:

> Metaphors may create realities for us, especially social realities. A metaphor may thus be a guide for future action. Such actions will, of course, fit the metaphor. This will, in turn, reinforce the power of the metaphor to make experience coherent. In this sense metaphors can be self-fulfilling prophecies.... What is at issue is not the truth or falsity of a metaphor but the perceptions and inferences that follow from it and the actions that are sanctioned by it. In all aspects of life we define our reality in terms of metaphors and then proceed to act on them. We draw inferences, set goals, make commitments, and execute plans, all on the basis of how we in part structure experience, consciously and unconsciously, by means of metaphor. (Lakoff & Johnson, 1980, pp. 156, 158)

When faced with a program change, for example, teachers do not only think and talk about time as a commodity—whether a resource or money—to be managed and used in various ways for the purpose of facilitating the change. The metaphors also provide the grounds for certain kinds of actions (e.g., establishing timelines and manipulating amounts of time) and experiences (e.g., tensions between objective and subjective-time). Because metaphors both highlight and hide aspects of the experience of program

change, teachers and administrators need to reflect on the implications of the metaphors they use for planning and organizing implementation. The two frames can be helpful analytic devices for becoming aware of how time is thought about and the actions that may be implied.

Implications

If, as Fullan (1982) claims, "individual meaning is the central issue" in program implementation, then it behooves us to take seriously that meaning for participants (p. 295). An important aspect of this meaning is that implementation and time are virtually synonymous for teachers. They talk about their implementation experiences from a temporal perspective because program change impacts on their time for planning and organizing lessons, becoming familiar with new materials and student activities, evaluating self and pupil work, and even for resisting the imposition that external innovations represent. Their talk highlights the concerns of not having enough time to accomplish everything that may be demanded or desired, of trying to cover too many things too soon in the classroom, and of resultant frustration. Time is therefore like a key thread that, when pulled, starts to unravel an entire garment. If implementation is defined as *actual use*—what teachers do with the program in their classrooms and how they interpret it for children—then there needs to be serious consideration of how teachers make sense of time and of the many ways in which they resolve any perceived tension between the two frames. As evidenced by the metaphors teachers use, both frames are an integral part of experiencing a new program. The ideal is to bring them into closer harmony with the kinds of mediation determined by the context.

Program developers can ask themselves what their work assumes about and implies for the teacher's time. Innovators forget easily that the school curriculum includes more than their new program and that teachers may be dealing with other innovations simultaneously. What seem to be even small changes may put cumulative demands on the amount and use of teacher time for planning, experimenting, and reflecting. Such demands may not be realistic and may contribute to tensions between the two frames that do not facilitate the teacher's task.

There are also implications for those who plan and administer inservice education across a school district. Typically such sessions are planned on a fixed-time schedule that presupposes all participants' needs will be similar and that difficulties with implementation arise in the same sequence for all. But rates of implementation will vary, and this variability makes the planning of inservice difficult if it cannot be assumed that teachers are at the same place in a program or have the same concerns at the same time. Depending on the extent and nature of change, considerable flexibility may be advantageous in the timing, content, and format of inservice. Otherwise planning standardizes everyone's experience, with the consequence that for many teachers the questions dealt with during inservice are already past or still in the future. Inservice content may be perceived as redundant, irrelevant, or well timed, depending on what the teacher is doing in the class-

room and how time tensions are being resolved. Part of the content of inservice could profitably deal with time, and the format of sessions could highlight teacher discussion with one another. Small group sessions, for example, allow participants with similar questions at a given time to make sense together.

This discussion of time makes problematic a common conception of implementation. Surely innovations are more than objects to be handed from the developers to the users; as embodiments of beliefs and values, new programs may be interpreted variously over time within different situations, by different people, and from various interests. This interpretation is complex because it has an *ongoingness* as an innovation is used and as conversation continues among participants. In a sense, then, the development of innovations such as curriculum documents and materials is never completed. The task may be initiated by a group called the *developers* and then further extended by teachers. Rather than assuming that they complete the innovation, developers at some point turn their work over to teachers who continue developing and modifying it. There may be agreement initially concerning its interpretation, but the ways in which the different parties continue to define what it is in their classrooms will reflect the various perspectives and contexts from which they individually work, with the result that the program may be in more or less constant change. What may have been apparent common sense at one time may become diverging views later on as redefining occurs. The meaning of the original project becomes changed over the course of experiencing its realization, and so innovations undergo modification or are discarded over time.

An understanding of time raises the political nature of change. Classroom life is shaped through the manipulation of fixed-time as more or less time is allocated to a new program. Teachers' experiences and their understandings of an innovation are influenced by those who schedule inservice training and who make time available. Thus the task of timetabling implementation is more than necessary administrative minutia. The control of time represents power and highlights once again the long-standing issue of teacher professionalization. One means of telling teachers *what they must do* is through the manipulation of timelines, schedules, and deadlines. Even when lived-time is recognized by administrators, there may be a tendency not to take it seriously or give it much importance. This is unfortunate, for teachers' experiences of subjective-time can be used to understand better and even to adapt the categories of fixed-time when and after they are planned. Everyone recognizes that a shortage of time is inevitable when change is attempted and that each individual daily devises ways to cope with temporal pressures. However, the fact that there is never sufficient time does not excuse those who are responsible for planning change to do so only on the basis of objective-time. Once a project is underway there needs to be sensitivity to lived-time and a willingness to continuously modify timelines, as well as an openness to criticism of the reasons for how time is allocated.

Notes

1. It is not assumed here that the problems of program implementation can be reduced to one issue, that of time. Obviously there are many interrelated aspects associated with successful change in classrooms, as well as may political, administrative, and ethical questions. Implementation depends on the multifaceted contextual conditions under which it occurs, and the teacher's experience of time is shaped by varied expectations, interests, presuppositions, and values.
2. The interviewer was Margaret L. Pike.
3. Metaphors do not always form coherent systems. There may be apparent contradictions because the metaphors we use are not wholly determined by our collective culture or body orientation, but also by our individual experiences. We would expect that teachers may use metaphors unrelated to the ideas of "commodity" or "movement" when talking about time.

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Old Shadows, New Images: A Revisionist View of the Principal's Role

Today's principal has multiple and complex roles and conflicting expectations. Current literature focuses on the principal as instructional and, ideally, symbolic leader. Technical management and humanistic skills are also expected; discipline is seldom discussed. Questionnaire findings from three recent studies of expectations of teachers and administrators (principals, board chairs, and superintendents) call for a revised view of the principal's role, however. A forced-choice instrument obtained rankings of five leadership roles for the principal. All respondents (but particularly teachers) preferred the disciplinary role, followed closely by symbolic and humanistic. Technical and instructional roles, while still important, ranked last. Our conclusion is that the old disciplinary shadow cast on the principalship must be reilluminated in the light of the new image of symbolic and humanistic leader.

All of us who went to school in the 1950s and earlier remember the fear that was associated with being sent to the principal's office. We remember, too, the shame (or the bold and unconvincing swagger) of the pupil who returned from the principal's office with red eyes and swollen hands. We've all seen movies about British private schools of an earlier era in which the headmaster administered ritual canings for major and minor offences in an attempt to strengthen the moral fiber of his pupils.

That kind of principal is gone; corporal punishment is rare, and the principal is no longer the authoritarian figure whose stentorian voice (over the intercom if the school was modern) began each school day with a prayer and a litany of announcements and reminders about acceptable school behavior. The principal is now expected to be a leader who embodies and symbolizes the shared values of the school community. Teachers, parents, students, school boards, superintendents, and the public at large expect the principal to have excellent leadership qualities; the preferred image of the principal is that of a superhero who inspires and encourages, consults and communi-

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cates, manages and orchestrates, balances the books and checks the bus schedules, roams the halls and talks on the telephone, thus juggling myriad duties while creating a positive climate for learning.

Admittedly, even the principal who fits this image still has to deal with disciplinary problems: Despite all preventive strategies, there will always be some students who do not assent to the values of the school and who persist in disruptive behavior ranging from rudeness to violence. For the most part, however, the principal's big stick has been replaced by a calm voice. Ideally, today's principal has learned effective communication skills and conflict management techniques in workshops and leadership academies. Putting them into practice is not really disciplining the students but persuading them to agree to modify their behavior for the good of the school community.

Discipline is only one of the many duties of the modern school principal, but it is seldom discussed in isolation in the large body of research literature on the principalship; when it is, it is seldom referred to as *discipline.* It seems that the very word has gone out of fashion, perhaps rightly so, for to read the history of the word in the *Oxford English Dictionary (OED)* is to be uncomfortably reminded of the sufferings of generations of monastics, prisoners, soldiers, and schoolboys.

While the original Latin root of the word *disciplinare* simply meant "to instruct," by medieval times its common meaning was "to chastise, correct, beat with rods." Through an accident of etymology, the English word *disciple* (from the same root) veered from the original Latin meaning of ordinary pupil or scholar and came to refer almost exclusively to one of the peaceful followers of Christ. Meanwhile, the semantic relative of the peaceful disciple evolved into the sadistic *disciplinarian* described in Fielding's novel *Joseph Andrews* as "scourging twenty or thirty boys in a morning." Thomas Gray is another author quoted in the *OED* as commenting on the religious fervor of "half a dozen wretches in a side chapel disciplining themselves with scourges full of iron pricks." Even the editors of the *OED* cannot resist making a bracketed editorial comment when they define discipline as "punishment inflicted by way of correction and training; in religious use, the mortification of the flesh by penance; also, in a more general sense, a beating or other infliction (humorously) assumed to be salutary to the recipient."

A sorry history indeed. Because discipline throughout the centuries has so closely linked physical punishment with obedience and moral training, it is no wonder that educators today are reluctant to use the word and more reluctant still to use the disciplinary techniques of the past. The collective memory of the English-speaking world is accurate: The word is tainted, perhaps irredeemably so.

Purpose

This is an article we did not intend to write. We certainly do not advocate a return to the days of the principal with a big stick, a flexible cane, or a thick strap, nor do we have a particular research interest in modes of discipline in

today's schools. We came to this area of study almost by accident in the course of a research practicum for graduate students in the Extended Campus Program in the Department of Educational Administration at the University of Alberta.

Extended Campus is an innovative outreach program initiated in 1981 to deliver Master of Education courses to a variety of professionals—mainly teachers, principals, and administrators in other human service fields—in areas remote from the Edmonton campus. In an attempt to integrate course offerings and develop a series of research projects which would build on one another, we decided two years ago that the student cohorts under our direction in the Extended Campus Program would conduct research projects focused on various aspects of school administration. A proposal was developed for a comprehensive research project entitled "School Administration in Transition," which could be broken down into a number of smaller student-staff research projects. The students' course work in statistics, research design, project design, and project management could then be integrated in a practical way with the work required to complete a joint research project. While major provincial funding for the "School Administration in Transition" project ultimately did not come through, the project is now being undertaken in a piecemeal manner using such funding as is available. The 1985-86 Red Deer cohort completed a pilot project on the selection of school administrators in central Alberta, and the 1986-87 Vermilion cohort examined the changing role of the principal in northeastern Alberta.[1]

Peripheral to the main findings of these two research projects, one of the secondary findings in both studies was rather surprising. Analysis of data provided by principals, assistant principals, and teachers revealed that the role of the principal as disciplinarian is more important than would have been expected, given the current focus in the research literature on the principal as an instructional or educational leader.

The purpose of the present article, then, is to throw light on a shadow: to evaluate one secondary finding of the Central Alberta and Northeastern Alberta studies, as well as the findings of a new survey of superintendents and school board chairs in the province of Alberta, in light of the current research on the principalship. Our general aim is to examine the expectations of stakeholders and principals themselves with regard to the role of the principal. More specifically, based on the results of these three surveys, we have attempted to determine how important the role of disciplinarian actually is among the many roles expected of the principal today and to describe the manner in which this role is now understood.

Literature on the Principalship

In recent years there has been extensive research interest in the principalship, particularly in how principal effectiveness relates to school effectiveness (Leithwood & Montgomery, 1986; Manasse, 1985). Leithwood and Montgomery (1986) have placed the majority of studies relating to improving principal effectiveness in three major categories: those which examine

the principal's role, including his or her leadership, instructional, managerial, and administrative duties; those which look at the principal's effect on school change and educational innovation; and those which try to delineate the principal's part in improving school effectiveness (p. 204). Other major types of recent research on the principalship include studies of the nature of principals' work, their selection (including the underrepresentation of women and minorities), their training, their individual characteristics and perceptions, and the influence of situation and environment on them (Mulhauser, 1983). In Alberta, where our three studies were conducted, recent research has also included studies of principals' job satisfaction (Friesen, Holdaway, & Rice, 1984; Gunn & Holdaway, 1985), job stress (Jankovic, 1983; Ratsoy, Sarros, & Aidoo-Taylor, 1986; Sarros & Friesen, 1987), decision making (Ewanyshyn, 1986; Grainger, 1984), and involvement with parents (Payne, 1987).

Most of these studies discuss only in passing the topic which turned out to be of most interest to us in this paper: the role of the principal as disciplinarian. We are not claiming that it is the most important of the principal's many roles. But the disciplinary role is receiving much less attention in the literature than other roles the principal fills—particularly the instructional leadership role—and our findings show that it deserves a much higher level of recognition.

The Multiple Roles of the Principal

Current research makes it clear that the role of the principal today is defined by complexity, multiplicity, ambiguity, and change. The principal is responsible for a large number and wide variety of duties: just how many can be illustrated by the massive list of 148 traits of the effective principal compiled by the Phi Delta Kappa Center on Evaluation, Development and Research to introduce its collection of recent research on the role of the principal (1984, pp. 2-3). Koener gives a more concise description of the principal's actual duties: "make realistic budgets, act as a curriculum expert, personnel manager, contract negotiator, public relations expert, disciplinarian, planner, and instructional leader" (Krajewski, 1977, p. 16).

Manasse (1985) also points to the multiplicity of principals' roles and summarizes the kind of work that principals do, based on a number of recent descriptive studies:

> Administrative work is characterized by (1) a low number of self-initiated tasks, (2) many activities of short duration, (3) discontinuity caused by interruptions, (4) the superseding of prior plans by the needs of others in the organization, (5) face-to-face verbal contacts with one other person, (6) variability of tasks, (7) an extensive network of individuals and groups, (8) a hectic and unpredictable flow of work, (9) numerous unimportant decisions and trivial agendas, (10) few attempts at written communication, (11) interactions [predominantly] with subordinates, and (12) a preference for problems and information that are specific (rather than general), concrete, solvable, and currently pressing. (p. 442)

The principal's world, then, is fragmented and ambiguous. Manasse points out that "Even the most effective principals ... consider ambiguity and con-

flicting role demands to be a major source of frustration in their jobs" (1985, p. 444).

The Principal as Instructional Leader

Everyone who has been reading recent educational research literature knows of the central focus on effective schools: Effectiveness is generally measured by student achievement, and effective instructional leaders are at the helm of these schools. It is seldom necessary to argue, as Shoemaker and Fraser felt obliged to do in their 1981 review of effective schools literature, that effective schools are possible, that "schooling *does* make a difference" and that "principals are clearly important in determining the effectiveness of schools" (p. 178). In a similar literature review, Sweeney (1982, p. 346) asserts strongly that "The direct responsibility for improving instruction and learning rests in the hands of school principals."

Effective instructional leaders, according to Persell and Cookson (1982), demonstrate a clear commitment to academic goals and create a climate of high expectations. But they do even more:

> More effective principals appear to become directly involved in instructional policy by sitting down and meeting with their teachers. Some principals supported their teachers' attendance at workshops or actually ran such workshops themselves. It isn't enough for the principal simply to convey the expectation of academic achievement without also stressing teaching strategies and behaviors that could be used to achieve those expectations. In the higher-achieving schools, principals were able to get teachers to use positive rather than negative reinforcement with students.... The importance of a change or an instructional strategy can also be conveyed by establishing incentives for using them. (p. 23).

Clearly, the literature presents an ideal image: the principal as instructional leader. Accepting this ideal, Alberta Education (1985) states unequivocally in its report *Partners in Education: Principles for a New School Act* that "the primary role of the School Principal is as the educational leader in the school and the local school community" (p. 43). The Alberta School Trustees' Association has adopted a similar position.

Most recent researchers do not question the ideal of instructional leadership, but they are asking what kind of instructional leadership should be provided and whether the principal alone must provide it. Mulhauser (1983), for instance, critically reviewed the recent research on all facets of the principalship. While finding that the theme of principals as leaders of instruction is "classic," he also raised the question of whether the principal should "inspect and direct the fundamental teaching-learning work of the school, or simply get out of the way in order to permit skilled teachers to get on with their own vision of how that should go" (pp. 7-8).

Other researchers have found that "teachers do not generally *perceive* principals as instructional leaders ... nor do principals usually function as such" (Gersten, Carnine, & Green, 1982, p. 48). Morris, Crowson, Hurwitz, and Porter-Gehrie (1982) also question the conventional wisdom that the principal is and should be the instructional leader, finding that "instructional leadership ... is *not* the central focus of the principalship" (p. 689). Examining what principals actually do, Morris et al. (1982) find that principals

spend most of their time on school-monitoring behaviors, serving as the school spokesperson outside the school, communicating with staff within the school, handling disturbances, and allocating resources (p. 689). Two of these five activities are clearly related to disciplinary activities, though Morris et al. do not use this term; in their words, the principal is responsible for the "maintenance of a controlled, orderly learning environment" (p. 690). Sackney (1980) suggests, furthermore, that teachers do not really *want* principals to be instructional leaders who intervene specifically in their classroom teaching; basically, they just want "to be left alone" (p. 2). What they want principals to do is make their job less frustrating, provide warmth and support, be fair, and help them with difficult students and parents (p. 2). Manasse (1985) confirms Sackney's conclusions, saying "Teachers appreciate principals who consistently emphasize educational objectives and who offer support and resources for attaining those objectives. However, there is some doubt about the effects of closely supervising the techniques of teaching" (p. 449).

Gersten et al. (1982) try to take some of the load off the principal as instructional leader, arguing that "those components of effective leadership which we call instructional support functions need not all be carried out by the principal. Realistically, most schools will need more than one person to adequately carry out all these activities anyway" (p. 49). They suggest that teachers, supervisors, curriculum experts, and other available personnel can just as effectively carry out instructional support functions, thus obviating the need for the principal to be the sole instructional leader. Rallis and Highsmith (1986) also argue that "school management and instructional leadership are two separate tasks that cannot be performed by the same individual" (p. 300). They maintain strongly that instructional leadership should come from within the ranks of the teaching profession rather than from the principal:

> At the same time that the effective schools movement has been calling for principals to become strong instructional leaders, teachers have been seeking a stronger voice in regulating and developing their own profession. As professionals, good teachers recognize the need to improve their knowledge and skills, to find rewards in their daily work, and to maintain the quality of newcomers to the profession. Teachers need leadership to make these tasks easier, but current research affirms that teachers are dubious of leadership from the outside.... In other words, teachers desire instructional leadership and recognize the need for it, but they are beginning to demand that it come from within their profession, not from without. (p. 300)

Rallis and Highsmith suggest that master teachers rather than principals should be the ones responsible for instructional leadership. Principals will then be freed to perform other essential management roles, creating "a safe and professional climate" and "protecting and enabling others to provide developmental leadership" (p. 303).

Thus while it may be ideal for principals to be instructional leaders, it may not be realistic for them to function as such, given their wide range of other duties. Furthermore, teachers may not want them to be, preferring to retain their professional autonomy over what goes on in the classroom. As Yukl (1982) says, "since teachers are professionals who insist on con-

siderable autonomy, close supervision is largely precluded" (p. 7). And even if principals do want to be better instructional leaders, they will find little practical guidance in the effective schools research on how they can improve their instructional effectiveness (Mulhauser, 1983, p. 224).

A new direction in research is that provided by Leithwood and Montgomery (1986), who go beyond instructional leadership in describing the complex role of the most effective principals. Leithwood and Montgomery have developed a comprehensive profile of four types of principals, from the least to the most effective (p. 17). At the bottom level is the Administrator, who focuses on rules and regulations and is only marginally effective as a principal. At the second level is the Humanitarian, who focuses on interpersonal relationships and is a modestly effective principal. At the third level is the Program Manager, whose focus is on programs. Roughly equivalent to what others have called the instructional leader, the Program Manager is a reasonably effective principal. The highly effective principal, whom they call the Systematic Problem Solver, goes beyond a dependence on developing and implementing programs; promoting student growth is the "bottom line" concern. Principals who are Systematic Problem Solvers are adaptable, creative, visionary, and consistent in applying a wide range of clearly delineated goals and specific strategies to each complex situation they encounter. All four types of principals must deal with disciplinary matters; what Leithwood and Montgomery do is discuss the differing orientations toward discipline that each type of principal has.

Literature on School Discipline

With its emphasis on school effectiveness and instructional leadership, current literature on the principalship seldom focuses on the principal as disciplinarian. For instance, Leithwood and Montgomery's *The Principal Profile* (1986) is extremely comprehensive, yet it discusses discipline only briefly, as a small but important part of a complex of goals, factors, strategies, and decision making procedures used by principals.

Sometimes, in the course of a more specific study, the continuing importance of the principal's disciplinary role emerges as a side issue which is not focused on. An article by Hubert and Dueck (1985) is a case in point. In a study of on-the-job training of assistant principals, both principals and assistant principals were asked to rank a list of 33 tasks in terms of the actual extent of training which principals provided to assistant principals. "Taking action on discipline measures requiring intervention" was rated highest by principals and third highest by assistant principals; "establishing policies and procedures for student discipline" was rated highest by assistant principals and fourth highest by principals. In their conclusions, Hubert and Dueck do not mention the importance of giving training in disciplinary matters because this was not one of their original research questions. However, this secondary finding is clear from their data.

Some researchers have brought the issue of school discipline out of the shadows. Crowson and Porter-Gehrie (1981) discuss the need for the principal to maintain organizational stability, manage conflict, and "keep the lid

on" (p. 27). Others (Burns, 1985; Jones, 1984; Nicholson, Stephens, Elder, & Leavitt, 1985; Purkey & Smith, 1983) discuss the need for "safe schools" and indicate that the development of such safe schools must be a cooperative effort of all parties involved (students, teachers, parents, the community, and the principal). These authors link safe schools with effective schools and focus on the creation of a positive school climate in achieving them. In other words, the principal is no longer seen as having sole responsibility for maintaining discipline, and discipline is seen as only one of several factors contributing to a positive school climate which can foster learning.

Most of the recent studies focusing on school discipline have been in the United States; Canadian studies are rare. But Clarke (1977) did conduct a far-ranging study of discipline in Alberta schools. The fact that he surveyed nine groups of stakeholders (principals, assistant principals, teachers, students, parents, superintendents, school trustees, central office personnel, and regional office personnel) indicates his sensitivity to the collaborative nature of disciplinary procedures and policies in schools today. His results showed a diversity of views on the subject: 41% of stakeholders felt that school discipline was just about right, and 34% felt it should be stricter (p. 2). Clarke stressed that "although groups differ ... in their views on school discipline, group differences were overshadowed by the diversity of view within any one group" (p. 5). His overall conclusion was that while "there was considerable satisfaction with school discipline as it was in 1975-76," any change should be in the direction of "slightly stricter school discipline" (p. i). Perhaps the relative paucity of Canadian studies of school discipline reflects that it is less a problem in this country than in the United States. Clarke's indication is that, at least in Alberta in the mid-1970s, stakeholders were fairly conservative and fairly satisfied with the status quo. His results also indicated, however, that the issue of school discipline can evoke a wide variety of responses from stakeholders, some preferring more leniency and others more strictness.

Clarke offers several definitions of discipline, including the broad dictionary definitions which focus on goals (training pupils in orderly conduct and action) and methods (control and direction by an authority figure). Pointing out that dictionaries invariably single out the method of punishment, he goes on to say that educational researchers define *school discipline* more narrowly, with less focus on punishment (pp. 9-10).

A general definition of school discipline which we would adhere to is that provided by Dettman: "the state or condition of order or good behavior among the students ... [and] the procedures by which this state of order is maintained" (Clarke, 1977, p. 11). For optimum learning to take place, an orderly and safe school is obviously necessary. The question is, what procedures should be used? It is clear that "discipline enforced by graded penalties such as reprimands, detention, withdrawal of privileges, corporal punishment, and expulsion is giving way to discipline developed by organizing the school in such a way that disorder will be avoided and self-control promoted" (p. 11). The modern trend in school disciplinary procedures, a

trend we certainly go along with, is thus "toward a more positive approach where the individual controls his own conduct toward realization of his own goals, as contrasted with a rather negative reliance on sanctions producing fear of being caught misbehaving" (p. 12).

This is exactly the orientation toward discipline which Leithwood and Montgomery (1986) put forward. Their discussion of what school discipline should be like reinforces the views of previous researchers in both the United States and Canada. In their study of Ontario principals, Leithwood and Montgomery found that the most effective principals cooperate with students, teachers, and principals to achieve a level of discipline which is "reasonable, fair, and consistent and is designed to help the student to develop and overcome problems" (p. 78). The principal's role is to establish and review criteria and standards for discipline in collaboration with staff and students, communicate them clearly, and ensure that they are not only widely shared but consistently applied and interpreted (p. 106).

In summary, current research literature clearly acknowledges that the principal has multiple roles and advocates either the instructional leadership role or one that is even more comprehensive. In either case, the disciplinary role is underemphasized. The findings of three studies we have recently undertaken in Alberta indicate that some revision of these current views of the principal's role may be necessary, with a view to redefining the principal's disciplinary role.

The Central Alberta Pilot Study

The pilot project for the "School Administration in Transition" project was undertaken in 1985-86 by a cohort of graduate students enrolled in the University of Alberta's Extended Campus Program in Red Deer. Assigned to teach the Research Methods and Data Analysis courses in this program, two of the authors decided as an innovation to combine the two courses and to use a real research project as the medium for delivering the course content. A request-for-proposal specifying a study on the selection of school based administrators—that is, principals and assistant principals—was given to the students before the first class. As there was limited time to undertake the project, a collection of appropriate articles and a review of the literature on the principalship was prepared and given to the students at the same time.

The students in the class formed the research team; the two instructors acted as project directors and consultants. Students were first assigned the task of preparing a formal research proposal for the project. The resulting four proposals were combined into a final proposal. Two of the resulting 15 research questions are of particular interest in this paper:

1. What are the perceptions of key stakeholder groups regarding the desired characteristics—personal attributes, preparation, skills, previous experience—of school based administrators?
2. What are the perceptions of key stakeholder groups regarding the desired leadership roles of school based administrators?

Due to constraints of both time and resources, the study was delimited geographically to the 10 school divisions and counties in Zone 4 in central Alberta (one of the six administrative zones in the province designated by Alberta Education). Stretching about 300 km from the Rocky Mountain foothills to the Alberta-Saskatchewan border, Zone 4 contains mainly small rural school districts, although the large urban school districts in Red Deer were also included in the study area. Key stakeholders were delimited to school board chairs, superintendents, school based administrators, and teachers. A questionnaire was used to survey the perceptions of a sample of teachers and school based administrators, and interviews were conducted with a sample of school board chairs, superintendents, and school based administrators.

Development of the Instrument

Using their reading as well as their own experience as principals and teachers, each four-student project team developed a questionnaire for teachers and school based administrators and an interview schedule for each of the school board chairs, superintendents, and school based administrators. The resulting questionnaires and interview schedules were used by the course instructors to develop a questionnaire and interview schedule for each of the three stakeholder groups.

While the questionnaires from the four student groups were being reviewed, it became apparent that a great number of different characteristics and behaviors of school based administrators had been identified. It was also apparent from the literature that each of these characteristics and behaviors would be important in a school based administrator, and that if a traditional Likert scale ranging from Not Important to Very Important were used to elicit responses, most would be rated Important or Very Important. While we considered it necessary to identify all the characteristics and behaviors which seemed relevant, doing so would not help identify the *most* important. Ranking of all characteristics was ruled out, as it has been shown that respondents have trouble ranking more than four or five alternatives (Sudman & Bradburn, 1983, p. 149). We had to find another procedure which would enable respondents to discriminate more important from less important role behaviors and characteristics of the principal.

Sergiovanni's 1984 article "Leadership and Excellence in Schooling," a seminal article which distinguishes the competent school from the excellent one, provided us with the direction we needed to solve the problem of ranking. Drawing together current thinking on the leadership qualities of principals, Sergiovanni has developed a provocative model of five *leadership forces*[2] which he believes the principal embodies (p. 6). (a) The *technical* leader uses sound management techniques to plan and coordinate activities within the school. (b) The *human* leader uses highly developed interpersonal skills to provide support, encouragement, and growth opportunities for everyone in the school. (c) The *educational* leader is the classic instructional leader who has been the focus of much current literature. These first three leadership forces are crucial features of competent leaders, but they do not

assure excellence in leadership: two other leadership forces must be present in the principal of an excellent school. (d) The *symbolic* leader "assumes the role of 'chief' and by emphasizing selective attention (the modeling of important goals and behaviors) signals to others what is of importance and value" (p. 7). (e) The *cultural* leader "assumes the role of 'high priest' seeking to define, strengthen, and articulate those enduring values, beliefs, and cultural strands that give the school its unique identity" (p. 9).

Impressed by the clarity and apparent comprehensiveness of the Sergiovanni model, we decided it would provide a usable framework for a forced-choice portion of our questionnaire. The characteristics and behaviors identified by the student research teams were examined and then sorted to see how well they fit the Sergiovanni model.

Two unanticipated problems arose during this process. First, while most of the behaviors/characteristics fitted well within one of Sergiovanni's five categories, a number of residual behaviors/characteristics concerning discipline remained. Sergiovanni does not discuss discipline explicitly, though he does mention "conflict management" as one of the interpersonal skills of the "human leader." Perhaps his hierarchical model, then, subsumes the characteristics and behaviors of the disciplinarian under this category. Yet it seemed to us that the issue of discipline had been neglected in the Sergiovanni definition of leadership forces and that a sixth category, *disciplinarian,* should be added.

To create a forced-choice series of questions, we described distinctive examples of behaviors or characteristics for each of the six categories. This is where the second problem occurred. Sergiovanni's cultural leader and symbolic leader categories were found to overlap because examples of behaviors or characteristics developed for one category seemed to fit equally well into the other. Accordingly, we modified the Sergiovanni model further, merging the two highest order categories into a single category which we called symbolic leader, thus leaving five categories: (a) symbolic, (b) instructional, (c) humanistic, (d) technical, and (e) disciplinary.

Four examples of behaviors or characteristics for each of these five categories were identified. One behavior or characteristic from each category was paired with one from each of the others, resulting in 10 pairs. Respondents were asked to assume they were choosing 10 school principals. In each case, the two candidates remaining on a hypothetical short list were identical except for two behaviors or characteristics. The pair of behaviors or characteristics was given, and respondents were required to choose one or the other. As a result, a picture of an individual's preference for a certain kind of principal would emerge.

The Sample

Questionnaires were sent to principals, assistant principals, and teachers in Zone 4, which has 126 schools with more than four full-time equivalent teachers. As 100 responses per category was deemed sufficient for statistical analysis, questionnaires were sent to all school based administrators in Zone 4 and to a sample of teachers. A cluster sample (all teachers from 12

randomly chosen schools) resulted in a full-time equivalent sample size of 168 teachers. Table 1 shows the response rate for questionnaires sent to each group for the Central Alberta pilot project and two follow-up studies which will be discussed later.

Data Analysis

Desired characteristics of school principals. As shown in Figure 1, all respondents have very high expectations for principals. While there were some differences among groups of respondents, the rankings of the characteristics were in essential agreement. For this reason, the data are aggregated in this figure. The average score for the respondents' ranking of 9 of the 11 characteristics was greater than 2.5, that is, Important or Very Important.

These rankings fall into three groups. (a) Three of the characteristics were rated as Very Important (mean score greater than 3.5). In rank order, these were outstanding interpersonal communications skills, extensive teaching experience, and highly efficient management skills. (b) Six of the characteristics were rated as Important (mean score greater than 2.5 but less than 3.5). In rank order, these were highly skilled leadership in staff meetings, superior qualities as an instructional leader, superior performance as a classroom teacher, being an exemplary role model in the community, having a charismatic personality, and having graduate level preparation in educational administration. (c) A third category was made

TABLE 1
Response Rates

Location	Number Sent	Returned Usable	Returned Unusable	Total Returned	Return Rate
Central Alberta					
Teachers	168[1]	156	0	156	92.86%
Principals	126	110	3	113	89.68%
Assistant Principals	100[2]	80	3	83	83.00%
Northeastern Alberta					
Teachers	174[1]	130	0	130	74.71%
Principals	62	44	0	44	70.97%
Province Wide					
Superintendents	113	100	3	103	95.15%
Board Chairs	140	108	1	109	77.86%

[1]This is a full-time equivalent number. The actual number of teachers would be greater.
[2]This is an estimate of the number of assistant principals in the schools surveyed.

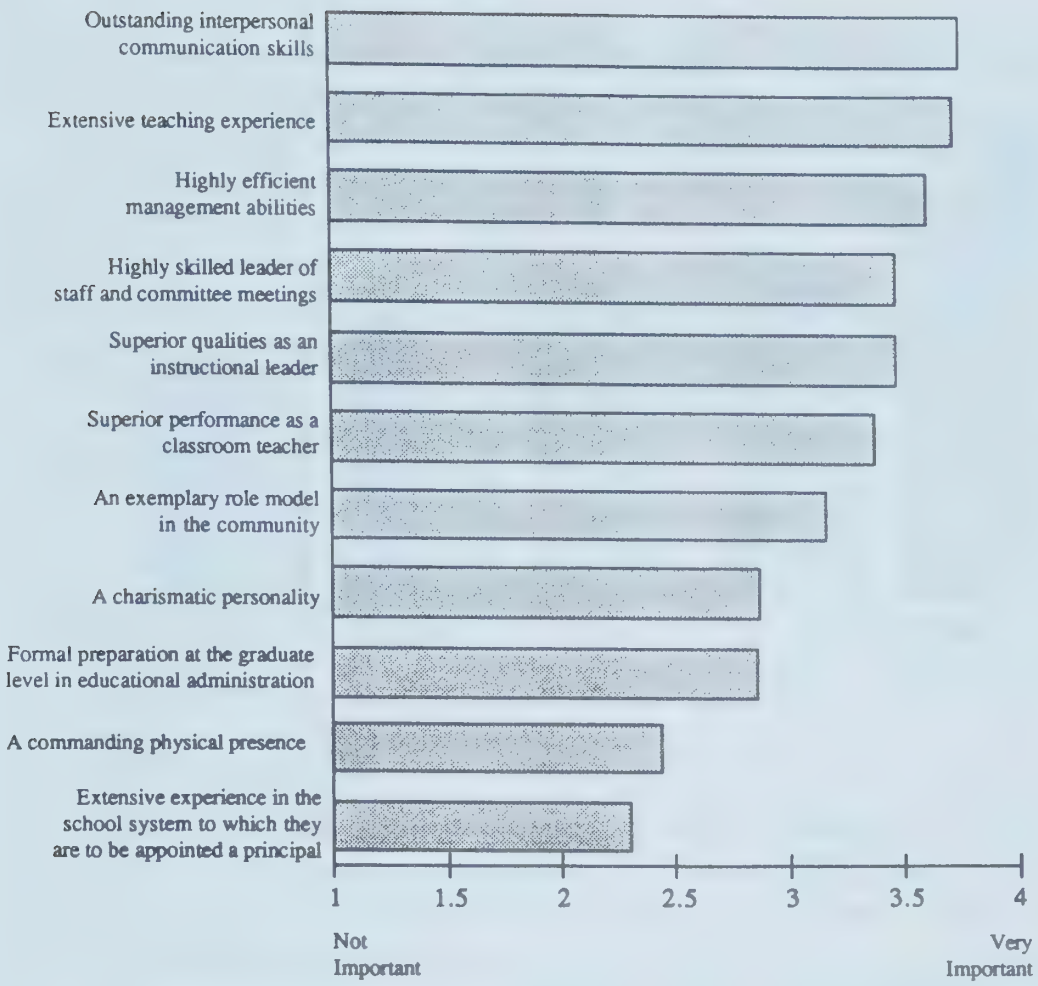
Outstanding interpersonal communication skills
Extensive teaching experience
Highly efficient management abilities
Highly skilled leader of staff and committee meetings
Superior qualities as an instructional leader
Superior performance as a classroom teacher
An exemplary role model in the community
A charismatic personality
Formal preparation at the graduate level in educational administration
A commanding physical presence
Extensive experience in the school system to which they are to be appointed a principal
1
1.5
2
2.5
3
3.5
4
Not Important
Very Important

Figure 1: Desired characteristics of the principal (Central Alberta Pilot Study)

up of two items for which the average mean score was less than 2.5: a commanding physical presence and extensive experience in the school system to which an administrator is appointed.

These findings were not surprising. The way in which the questions were asked permitted respondents to be expansive in describing their preferences. When we placed respondents in a forced-choice situation, however, we were able to distinguish a clear pattern of preferences among five important roles of the principal.

Desired leadership roles in the principal. As explained earlier, five leadership roles of the principal were identified for investigation in this pilot study. The findings regarding the desired roles of the principal are shown in Figure 2. Teachers and school administrators agreed on the rank order of the first three roles—disciplinary first, followed by humanistic and symbolic. Teachers ranked the technical role fourth and the instructional leader role fifth, while school administrators reversed this, ranking instructional fourth and technical fifth.

An interesting finding is revealed when teachers' responses are compared to school administrators' responses. This question was scored so that the maximum score any of the roles could receive was 8, while the minimum was 0. The average score for teachers for disciplinarian (6.09) was 1.02 points higher than the school administrators' average score (5.07),

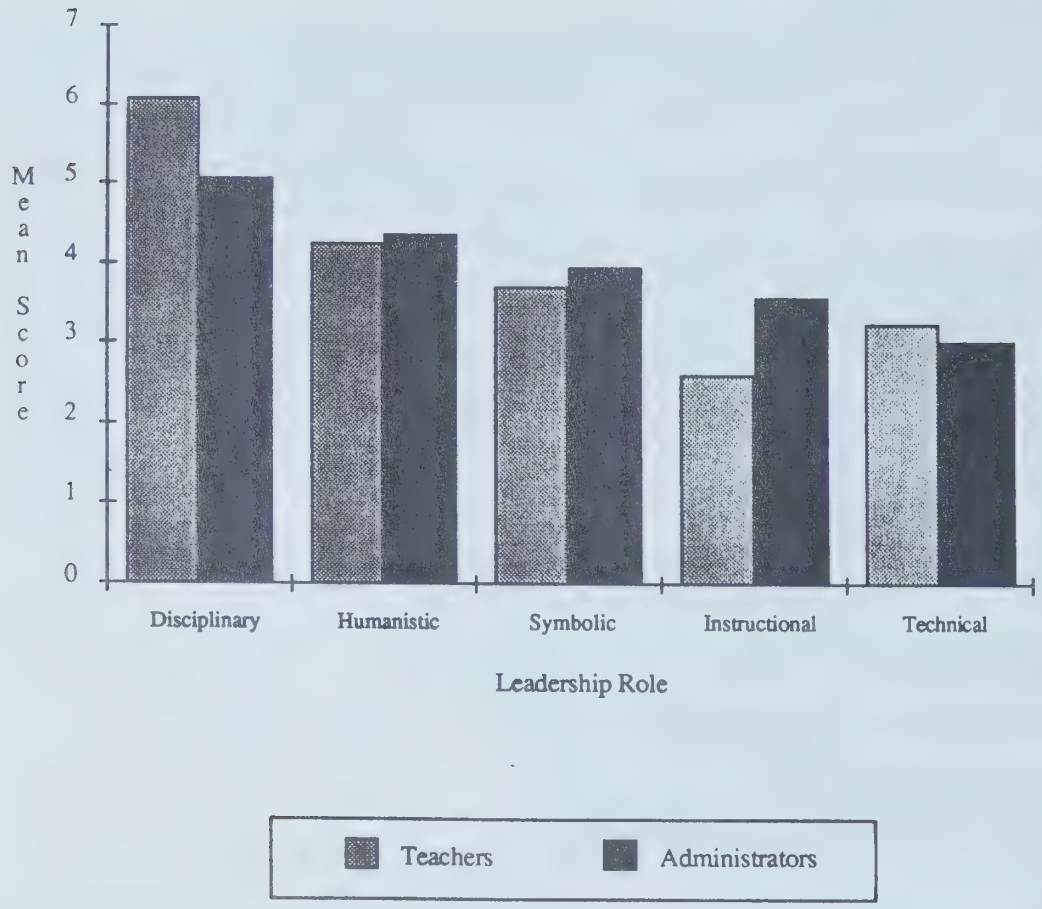

Figure 2: Strength of leadership role required of principals as perceived by school administrators and teachers (Central Alberta Pilot Study)

while for instructional leader (2.67) it was 0.96 points lower than the administrators' score (2.61). These two differences were found to be significant (t-tests, $p \leq 0.05$), indicating that while both teachers and school administrators see the most important role of the principal as that of disciplinarian, teachers see this as significantly more important than do school administrators. Conversely, both teachers and school administrators see the role of instructional leader as relatively less important than the other roles, and teachers perceive this role to be significantly less important than school administrators do.

The most noteworthy finding, then, was that both teachers and school administrators saw the role of the principal primarily as that of disciplinarian, giving this role a significantly higher ranking than the other four (ANOVA, $p \leq 0.05$). Furthermore, although much of the current literature on the role of the principal stresses the importance of the principal as an instructional leader, the questionnaire results here show that teachers rank this role last, and school administrators rank it second last.

During interviews, administrators revealed in response to an open-ended question that they perceived the most important roles of the school based administrator to be related to management, instructional leadership, interpersonal relationship skills, and public relations. In light of the strong finding in the questionnaire data that both teachers and administrators felt the disciplinarian role to be most important, it is significant that during inter-

views, only 6 out of a total of 131 specific comments offered by administrators related to the role of disciplinarian.

These findings were surprising to us. How do we account for the silence of school administrators in discussing the disciplinarian role in interviews, in view of the importance they attached to it in the forced-choice question format of the questionnaire? How do we account for the apparent dissonance between our findings and the literature regarding the importance of instructional leadership? With these questions in mind we undertook two follow-up studies: (a) a study of principals and teachers in another geographic region, northeastern Alberta, and (b) a study of superintendents and board chairs throughout Alberta, using a slightly modified forced-choice instrument.

The Follow-Up Studies

During the 1986-87 academic year, students in the Research Design and Statistics courses in the Vermilion Extended Campus Program undertook a study entitled "The Changing Role of the Principal in Northeastern Alberta," using methodology similar to that described for the Central Alberta Pilot Study. Because of the very interesting findings with respect to the role of the school administrator as a disciplinarian, we decided to "piggy-back" a replication study. At the same time, we undertook an independent study to find out what school superintendents and school board chairs throughout the province thought about the role of the principal.

Research Questions

Based on the findings of the Central Alberta Pilot Project, the following research questions were developed:

1. Given a list of characteristics of school principals, will respondents once again rate almost all of the characteristics as being important?
2. Will there be any differences of responses among groups on the rating of these characteristics?
3. In the forced-choice situation, how will respondents distribute their preferences among the five identified leadership roles?
4. Will there be any differences of responses among groups on the rating of these leadership roles?

Development, Validity, and Reliability of the Instrument

Sections of the questionnaire used in the Central Alberta Pilot Study were modified slightly for use in these two studies. The number of characteristics to be rated was increased from 11 to 15. A section addressing specific experiences which might be useful in preparing for a principalship and a short demographic information section were added. One modification was made in the forced-choice series of questions used in the Central Alberta Pilot Study. Our concept of disciplinarian was narrowed and sharpened. We had included in the pilot study the characteristic "knows the strengths and weaknesses of individual teachers" as one of the alternatives which we had scored as a characteristic of a disciplinarian. On analysis of the data, discus-

sions with others in the field, and a more specific review of the literature, we felt that the role of disciplinarian should be limited to that of student disciplinarian. The alternative was replaced with "adjusts disciplinary measures to meet individual student characteristics." The revised forced-choice instrument is shown as Figure 3.

To test the face validity of the forced choice instrument, we gave descriptions of our five leadership roles to a number of our colleagues and students and asked them to categorize each item according to leadership role. Their categorizations were in almost unanimous agreement with the intended categorization in each case.

To test the reliability of the instrument, we administered it to 45 MEd and PhD students in our Department of Educational Administration, with a retest the following week. For the 10 forced-choice questions, there was agreement ranging from 71% to 89%, with an average of 79%. Correlations between the first and second administration for each of the five leadership roles were all significant at $p \leq 0.001$.

Selection of the Sample

The Northeastern Alberta study on the changing role of the principal was delimited to school jurisdictions in eight counties and school divisions in Zones 2 and 3, northeast of Edmonton. Stretching 200 km west from the Alberta-Saskatchewan border to about 50 km east of Edmonton, the study area contains mainly rural schools with enrollments of 300 or fewer; no urban school districts were included. All principals in these jurisdictions were surveyed, and a cluster sample of all teachers in 10 randomly selected schools formed the teacher sample.

To supplement the data gathered in this second regional study, we carried out a third study with superintendents and board chairs throughout the province. Because there are 142 public and separate school jurisdictions which actually operate schools in the province, it was decided to send questionnaires to the board chair and the superintendent of each district. A number of superintendents in the province act as superintendent for more than one jurisdiction. In these cases, the superintendent received a single questionnaire. Table 1 reports the response rate for the two follow-up studies as well as the Central Alberta Pilot Study.

Desired Characteristics of School Principals

Respondents were asked to rate the importance of the 15 identified characteristics. The results were scaled, with Not Important being set at 1 and Very Important at 4. There was substantial agreement among the groups on the rating of these characteristics. Figure 4 aggregates responses from the four groups and ranks the 15 characteristics from highest to lowest. All respondents had very high expectations of principals: Only three of the characteristics had a mean rating less than 2.5 (the lower limit of the Important rating). Five of the characteristics had a mean rating greater than 3.5, indicating a consensus that they were Very Important. Interestingly,

You are asked to take on the role of an interviewer faced with the task of choosing ten school principals. The applicants have been short-listed so that in each competition only two remain. In each of the ten cases below, the applicants are identical in all respects except that one applicant strongly exhibits the behavior or characteristic described in statement **A**; the other, the behavior or characteristic as described in **B**. In each case, choose the person who shows the behavior or characteristic which you feel is *more important* for an effective school principal.
Circle the statement label (**A** or **B**) to indicate your choice.

1. **A** clearly communicates school goals, programs and policies to the community
   B engages regularly and effectively in teacher and program evaluation

2. **A** encourages team spirit among staff and students
   B develops and implements clear policy for student behavior

3. **A** acquires efficiently the necessary resources for the operation of the school
   B is always empathetic with students, staff, and parents

4. **A** is an exemplary teacher
   B is "firm but fair" in administering discipline within the school

5. **A** is a strong "people person"
   B has a clear vision of the future for the school

6. **A** outlines administrative practices and procedures clearly to staff and students
   B strongly encourages the professional development of teachers

7. **A** displays a lively and timely sense of humor
   B adjusts disciplinary measures to meet individual student characteristics

8. **A** ensures that school goals are identified and acted upon
   B delegates tasks and ensures completion

9. **A** efficiently allocates and monitors the use of resources
   B handles student discipline problems firmly and decisively

10. **A** is readily available to meet with parents, teachers, and students
    B offers useful feedback to teachers on their instructional performance

Figure 3: Selecting a principal

these five characteristics would each make a good one-sentence description of one of the five leadership roles in our revised Sergiovanni model.

A One-Way Analysis of Variance was performed on the scores of each of the 15 characteristics, with the respondent group being the independent variable. Significant differences between respondent groups were found in nine of the characteristics.[3]

Leadership Roles

As shown in the previous section, the respondents rated a single-sentence description of each of the leadership roles as Very Important. The forced-choice series of questions then permitted discrimination among these five leadership roles. That is to say, we were able to achieve fine resolution of leadership roles which seem to be of equal importance to respondents. Figure 5 shows the mean rating for each of the five leadership roles for each of the four groups of respondents. A Two-Way Analysis of Variance with one factor repeated was performed on the Figure 4 data to see whether there was an overall main effect for leadership roles.[4] A significant main effect across leadership roles and a significant interaction effect were found. Two clear groupings emerge: Symbolic, disciplinary, and humanistic leadership roles all have a mean score around 4.5, while technical and instruction-

al have mean scores around 3.15. Scheffé tests ($p \leq 0.05$) revealed significant differences between each of the leadership roles in the first group and each of those in the second group. The results are shown in Table 2; significant differences between leadership roles are indicated with an asterisk.

The significant interaction effect on the two-way repeated measures ANOVA indicates there is some disagreement between groups of respondents as to the relative importance of the five leadership roles. This can also be seen from an inspection of Figure 4. To examine whether there were significant differences between respondent groups on their ratings of leadership roles, a One-Way Analysis of Variance was performed between the four respondent groups for each of the five leadership roles. Significant differences, summarized below, were found for three of the leadership roles.

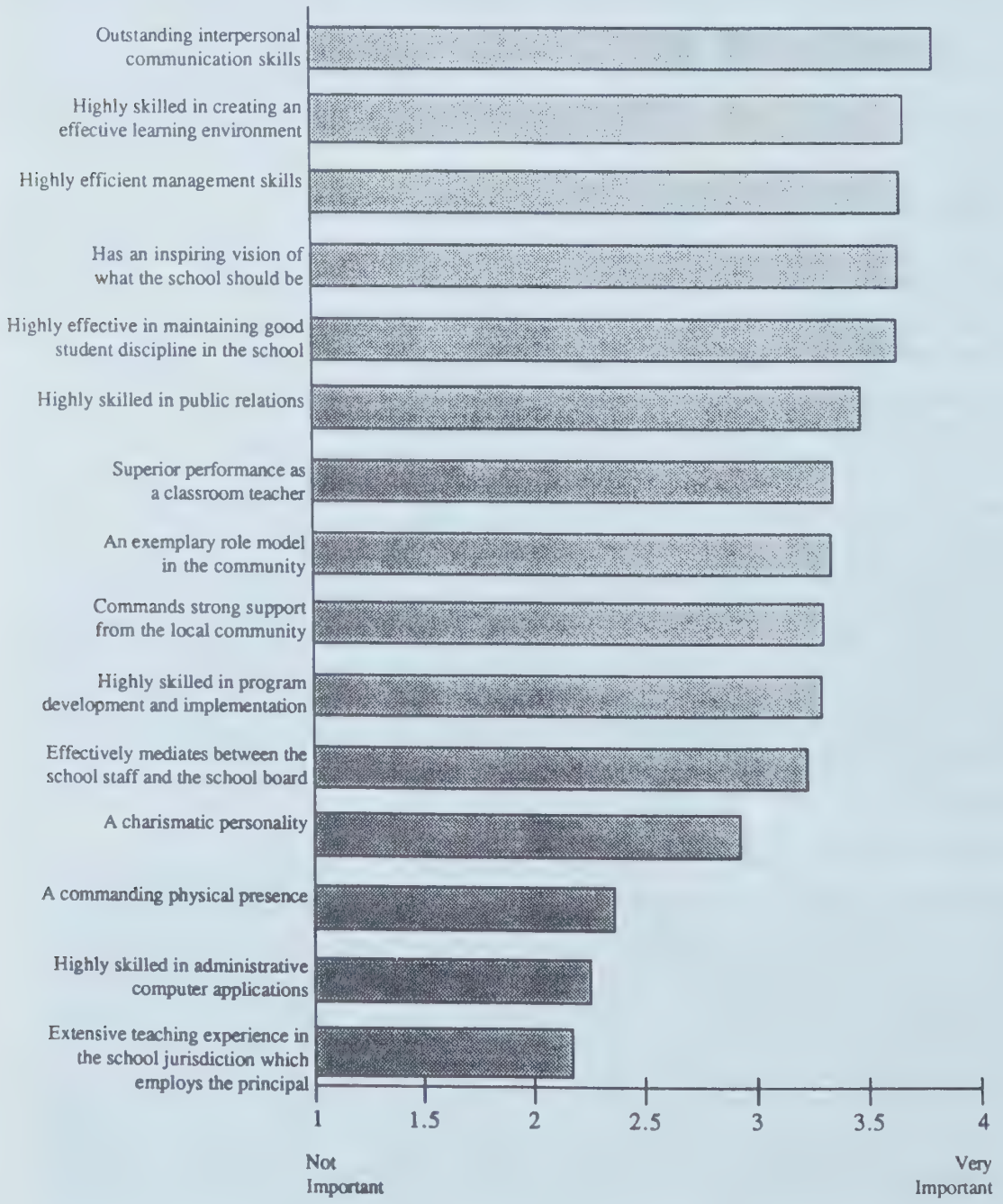
Outstanding interpersonal communication skills
Highly skilled in creating an effective learning environment
Highly efficient management skills
Has an inspiring vision of what the school should be
Highly effective in maintaining good student discipline in the school
Highly skilled in public relations
Superior performance as a classroom teacher
An exemplary role model in the community
Commands strong support from the local community
Highly skilled in program development and implementation
Effectively mediates between the school staff and the school board
A charismatic personality
A commanding physical presence
Highly skilled in administrative computer applications
Extensive teaching experience in the school jurisdiction which employs the principal
1
1.5
2
2.5
3
3.5
4
Not Important
Very Important

Figure 4: Desired characteristics of the principal (Northeastern Alberta and Provincial Studies)

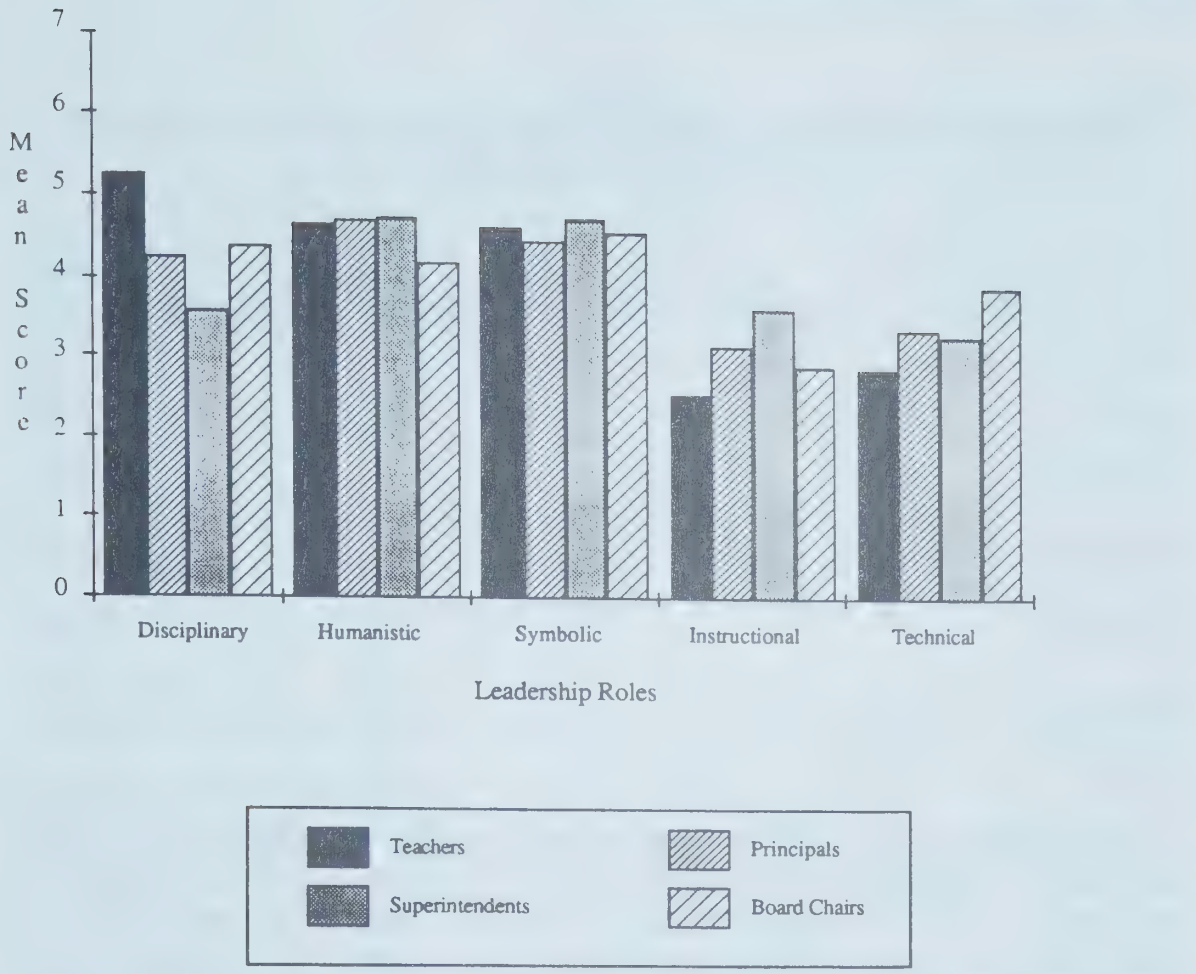

Figure 5: Strength of leadership role required of principals as perceived by all respondents (Northeastern Alberta and Provincial Studies)

Scheffé tests ($p \leq 0.05$) were performed where significant differences were found.

Teachers rated the *disciplinarian* as the most important overall; in fact, there was a significant difference between their rating of disciplinarian and the rating of each of the other three groups. Board chairs also rated the disciplinarian significantly higher than did superintendents. Superintendents rated the *instructional leader* as significantly more important than did teachers. Board chairs rated the *technical leader* as significantly more important than did teachers.

Principals and superintendents ranked the *humanistic* and *symbolic* leadership roles as the most important, giving these similar ratings as the most important, while board chairs had *disciplinary* and *symbolic* approximately tied as the most important. There were no significant differences between the groups on either *humanistic* or *symbolic* leadership roles.

To examine each of the respondent groups for differences between their ratings of the five leadership roles, a One-Way Analysis of Variance (repeated measures) was run for each of the four groups. Table 3 shows the significant differences between the five leadership roles for each of the four respondent groups (Scheffé, $p \leq 0.05$). Significant differences are indicated with a T, P, S, and B for teachers, principals, superintendents, and board chairs respectively.

TABLE 2
Significant Differences ($p \leq 0.05$) for Scheffé Comparisons of Leadership Roles (All Respondents)

	Symbolic	Humanistic	Disciplinary	Technical	Instructional	Mean Score
Symbolic				*	*	4.62
Humanistic				*	*	4.54
Disciplinary				*	*	4.45
Technical	*	*	*			3.35
Instructional	*	*	*			3.04

It is interesting to note that the greatest number of significant differences was for teachers and superintendents (6), followed by board chairs (3), and principals (1). Looking at Figure 4 we see that the direction of these significant differences changes: teachers, for instance, find disciplinary leader significantly *more important* than either instructional or technical leader, while superintendents find disciplinary leader significantly *less important* than either symbolic or humanistic leader.

It is also interesting to note that all groups with the exception of principals rated the instructional leadership role as significantly less important than the symbolic: Teachers and board chairs rated it significantly less important than the disciplinary, and teachers and principals rated it significantly less important than the humanistic. A glance back at Figure 4 shows that, for instance, principals actually rated the difference between symbolic leader and instructional leader greater than did superintendents. Whereas the difference of lesser magnitude was significant for superintendents, the difference of greater magnitude was not significant for principals. Inspection of the data shows, for the group of principals, other such differences which were larger than for other groups. Due to the very small number of principals in the study, however, these differences did not achieve significance.

Summary of Findings

It seems that respondents do indeed want the principal to be a superhero who demonstrates a wide variety of skills and attributes. Twelve of the 15 behaviors or characteristics were seen by all respondents as important. It is interesting to take special note of the five most highly rated items; each of these provides a nice capsule description of one of the five leadership roles.

The data also clearly establish a leadership role for the principal pertaining to disciplinarian. At the same time, the data establish a distinctly lower priority for the instructional (and the technical) leadership role. Symbolic,

TABLE 3
Significant Differences for Scheffé Comparisons of Leadership Roles
(Four Groups of Respondents, $p \leq 0.05$)

	Symbolic	Humanistic	Disciplinary	Technical	Instructional
Symbolic			S	T,S	T,S,B
Humanistic			S	T,S	T,S,P,B
Disciplinary	S	S		T	T,B
Technical	T,S	T,S	T		
Instructional	T,S,B	T,P,S,B,	T,B		

disciplinary, and humanistic leadership roles are seen as having higher priority by respondents considered as a whole than the technical and instructional leadership roles. Teachers, in comparison with the other three respondent groups, attach greatest importance to the disciplinary role. Teachers rate this force as the highest, and their average score is significantly higher than those of the other three groups. Superintendents were the only group *not* to rate the instructional leadership role as the *lowest* in importance.

Interpretation of Findings

This study leads to two major conclusions about the role of the principal. First, stakeholders perceive the principal's role as being very broad. Incumbents are expected to have a very good command of a large number of skills and to demonstrate a large number of positive personal behaviors and characteristics. This expectation that the principal will be all things to all people leads to our image of the principal as a superhero or superheroine.

Second, of the five leadership roles rated most important, the establishment and maintenance of discipline in the school is seen as one of the three most important, with teachers rating it the most important. In view of the heavy emphasis in both academic and professional literature on the principal as instructional leader, it was interesting to find that in a forced-choice situation, teachers and board chairs rated the disciplinary role as significantly more important than the instructional leadership role. Superintendents, the group which rated the disciplinary role the lowest, rated it as similar in strength to the instructional leadership role.

We need to clarify what kind of disciplinary role we feel the respondents support. The fact that all four respondent groups gave high ratings to the humanistic role suggests an interpretation of the disciplinary role in humanistic terms. It seems that teachers want a "tight ship," but they want Mr. Chips rather than Captain Bligh at the helm. In keeping with this preference, we choose to see discipline as analogous to one of Herzberg's

"hygiene factors" (1966), that is, as a necessary precondition for satisfactory organizational life, a foundation on which to build high levels of performance. Discipline can be seen as so important and fundamental that it is not talked about, even by practitioners. Thus there is a silence in the interviews with regard to discipline, and the literature on the principalship speaks of it only in whispers. While there is tacit acknowledgment in the literature of the principal's leadership role in discipline, our position is that models of school leadership such as that proposed by Sergiovanni do not adequately acknowledge the foundational character of school discipline in the totality of the principal's leadership roles.

Conclusion

Our own findings and the literature on effective schools, on instructional leadership, and on discipline support the contention that firm and fair discipline is indeed a significant feature of effective schools. Its function is admittedly a supportive one—to maintain an orderly climate in which effective teaching and learning may flourish—but order and discipline nonetheless form a necessary foundation on which to build an effective school. As Purkey and Smith (1983) point out, "common sense alone suggests that students cannot learn in an environment that is noisy, distracting, or unsafe" (p. 445).

Despite the negative connotations of the word *discipline,* the need for order and stability in a school remains. Researchers whose major focus is on instructional leadership continue, in general, to place the burden for discipline on principals, whose leadership skills are seen as necessary for maintaining a peaceful and orderly school climate in which learning can flourish. Such researchers are also the ones who, in general, tend to use circumlocutions and to downplay the word *discipline*, while quietly admitting that it is an important component of effective schools. Those researchers who write specifically on discipline are less reticent about using the word, and they also stress that all members of a school community must cooperate in achieving order and discipline, and thereby effective teaching and learning, in schools. The literature is thus not exactly silent on the issue of discipline, but one has to listen closely to hear what it says.

The attention paid in this paper to the principal as disciplinarian may tend to make us lose sight of the primary fact that teachers, superintendents, and board chairs have enormous expectations of principals—as do principals themselves. The characteristics and behaviors called for by respondents in our three studies are indeed indicative of a superhero. It must also be remembered that establishing a foundation of discipline and order in a school is only one of the principal's many duties. Distinctions among what emerged as the top five leadership roles were revealed only when respondents were forced to make choices. When they did, two groups emerged: a group of three (symbolic, humanistic, and disciplinary), which were seen as significantly more important than a group of two (instructional and technical). All five of these leadership roles still assumed major importance, however.

It is clear from the importance attached to the humanistic and symbolic leadership roles that respondents in our three studies do not want their principals to carry a "big stick" but rather to use a fair and firm approach to discipline—all the while carrying out their many other duties with efficiency, excellence, and panache. The old shadow of the principal as disciplinarian is still there, though in a revised form which is much more humanistic. The new, polished image of the principal has many facets, one of which is disciplinary leadership.

Our experience in following up a secondary finding which emerged unexpectedly leads us to make a methodological point: that educational researchers should remain open to possibilities suggested by serendipitous research findings. Conclusions must, of course, be tied to research questions, but rather than ignoring unexpected findings we might consider a serious follow-through on them. Our own follow-through on the disciplinary role of the principal is not by any means the final word on this subject. We hope that future researchers, especially in Canada, will not shy away from examining this area in much more detail.

Notes

1. The authors acknowledge the substantial contributions to this article made by the 22 graduate students, corporately known as Red Deer Outreach '86 and Vermilion Outreach '87, who were involved in these two research projects.
2. The term *leadership force* is not particularly to our liking. Although the term *leadership role* may suggest a singular style of leadership that would be misleading, we have used this term in preference to leadership force, with the understanding that an individual leader must balance several important aspects of leadership. Our definition of leadership role thus includes both the individual characteristics and the specific behaviors of a principal and is roughly equivalent to Sergiovanni's metaphorical term *leadership force*.
3. Scheffé tests ($p \leq 0.05$) were performed where significant differences were found. The significant differences are summarized as follows:
   - Teachers rated (a) *highly effective in maintaining good student discipline in the school* as significantly more important than did superintendents; (b) *effectively mediates between the school staff and the school board* as significantly more important than did each of the other three groups; (c) *extensive teaching experience in the school jurisdiction which employs the principal* as significantly more important than did each of the other three groups; *(d) a commanding physical presence* as significantly more important than did board chairs; and (e) *highly skilled in administrative computer applications* as significantly more important than did superintendents.
   - Board chairs rated (a) *an exemplary role model in the community* as significantly more important than did each of the other three groups; (b) *highly efficient management skills* as significantly more important than did principals or superintendents; and (c) *highly skilled in creating an effective learning environment* as significantly more important than did teachers.
   - Board chairs and superintendents rated (a) *has an inspiring vision of what the school should be* as significantly more important than did teachers; and (b) *outstanding interpersonal communication* as significantly more important than did principals and teachers.
   - Principals rated *commands strong support from the local community* as significantly more important than did each of the other three groups.
   - Superintendents rated *superior performance as a classroom teacher* as significantly more important than did teachers.
4. As we are dealing with ipsitive data, no main effect between groups could exist.

5. This is a revised version of a paper originally presented to the annual conference of the Canadian Association for the Study of Educational Administration, Canadian Society for the Study of Education, Hamilton, Ontario, June 1987.

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Perceptions of Control over Educational Decisions in Alberta

This article reports perceptions of control over educational decisions of an operational nature in four large, urban school districts in Alberta. A sample of 32 trustees, 77 central office administrators, and 64 randomly selected principals participated in this questionnaire study. Respondents were asked to indicate on a five-point Likert-type scale their perceptions of actual and preferred control over educational decisions by five organizational levels (teachers, principal's office, superintendent's office, school board, and Alberta Education). The results indicated that the principal's office, the superintendent's office, and the school board were perceived to have major control over most decision categories. Teachers and Alberta Education were perceived to have the least overall control. Similarly, the principal's office, the superintendent's office, and the school board were preferred to have major or shared control over most decision categories, while teachers and Alberta Education were preferred to have the least control. Overall, respondents were satisfied with the current distribution of control over educational decisions and favored only a few changes in some decision areas.

Changes in control over educational decisions reflect shifts in the balance of power, authority, and influence which occur from time to time at different organizational levels (Scott, 1981). In recent years there have been several developments in Alberta which may have had a significant impact on control over educational decisions. These include the growth of teacher professionalism, school-based budgeting, the Management and Finance Plan, and the Secondary Education Review, as well as the activities associated with the proposed revision of the School Act. Consequently, the patterns of control over educational decisions observed in earlier studies may no longer apply (Chung, 1985; Louden, 1980; March, 1981; Renihan, 1977; Simpkins, 1968). This article reports on a study (Ewanyshyn, 1986) which examined current perceptions of control over educational decisions in four large urban school districts in Alberta.

Purpose and Plan

The study sought to determine the perceived degree of actual and preferred control over educational decisions exercised by persons working at various levels of the educational system: provincial, school board, superintendent, principal, and teacher. Two basic questions were addressed: (a) What is the

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overall degree of control over educational decisions exercised by each of the five organizational levels, according to the perceptions of trustees, superintendents, and principals? (b) What is the overall degree of preferred control over educational decisions at each of the five organizational levels?

A sample of 32 trustees, 77 central office administrators, and 64 randomly selected principals participated in this questionnaire study. In all, 152 questionnaires were returned, representing 88% participation. The focus of the questionnaire was on the perceptions of control over educational decisions in the operational sphere, as opposed to strategic policy decisions (e.g., School Act Revision). Questionnaire items were drawn from similar studies concerned with the distribution of power, authority, and influence over educational decisions (Chamberlain, 1975; Hoy & Sousa, 1984; March, 1981; Simpkins, 1968). Final selection and modification of items were carried out following a pilot study.

Ten categories of decisions were included in the questionnaire: (a) finance and budgeting; (b) capital expenditures; (c) equipment, supplies, and services; (d) curriculum and instruction; (e) personnel management; (f) student management; (g) organizational structure; (h) community relations; (i) implementation of new programs; and (j) policy and decision making. Four decision items were developed for each category, so that in all 40 decision items were identified. Respondents were asked to indicate on a five-point Likert-type scale their perceptions of actual and preferred control over educational decisions by five organizational levels (teachers, principal's office, superintendent's office, school board, and Alberta Education).

Findings

Overall Perceived Degree of Actual Control

Table 1 presents in rank order the perceived degree of actual control by organizational level for each decision item. The rank order of organizational levels from left to right indicates an increasing degree of control over the decision item. For example, regarding the first item (finance to a school), teachers (T) were perceived to have the lowest level of control, while the superintendent's office (S) and the school board (B) were tied for the highest level of control. The ranking by level was based on the percentage distribution of perceived actual control (IS) over educational decisions. Whenever two levels were perceived to have the same amount of control, a slash (/) was used to indicate that the levels were tied in rank order, although the "higher" organizational level was placed higher in ranking.

Table 2 provides a summary of the perceived degree of actual control over educational decisions by organizational level. The ranking shows how many times each level was listed in a particular position in the rank order. The mean was calculated by multiplying the frequency of the organizational level in a particular position by the value of the position in the rank order for all 40 items. The mean score thus indicates the overall perceived degree of actual control by the organizational level on a scale from one to five.

Principal's office. The organizational level with the highest mean score (3.73) was the principal's office (Table 2). It was perceived to have the

highest degree of actual control over 18 of the 40 decision items, more than any other organizational level. As indicated in Table 1, these items pertained to the following decision categories: (a) student management; (b) community relations; (c) policy and decision making; (d) finance and budgeting; (e) equipment, supplies, and services; (f) personnel management; and (g) organizational structure. The principal's office was perceived to have the highest degree of control over all four items in the student management category and over three items in each of the community relations and policy and decision making categories.

The principal's office was also perceived to have the second-highest degree of actual control over four decisions, two in each of two decision categories: (a) curriculum and instruction; and (b) organizational structure. It was perceived to have the least control over two decision items (deciding on curriculum content and the selection of a principal).

Superintendent's office. The superintendent's office (Table 2) had the second-highest mean score (3.48). It was perceived to have the highest degree of actual control over four of the 40 decision items. As indicated in Table 1, these items pertained to the following three decision categories: (a) personnel management; (b) capital expenditures; and (c) organizational structure.

In addition, the superintendent's office was perceived to have the second-highest degree of actual control over 17 decision items in the following categories: (a) new programs; (b) equipment, supplies, and services; (c) finance and budgeting; (d) capital expenditures; (e) policy and decision making; (f) curriculum and instruction; (g) personnel management; and (h) community relations. It was perceived to have the second-highest degree of actual control over all four items in the new programs category; over three items in the equipment, supplies, and services category; and over two items in each of the following categories: (a) finance and budgeting; (b) capital expenditures; and (c) policy and decision making. Also, the superintendent's office was perceived to have the second-lowest degree of control over only four decision items, less than any other organizational level in the two lowest positions of rank order.

School board. The school board (Table 2) had the third-highest mean score (3.28). It was perceived to have the highest degree of actual control over 13 of the 40 decision items. As indicated in Table 1, these items pertained to the following seven decision categories: (a) new programs; (b) capital expenditures; (c) finance and budgeting; (d) equipment, supplies, and services; (e) curriculum and instruction; (f) community relations; and (g) policy and decision making. The school board was perceived to have the highest degree of actual control over all four items in the new programs category and over two items in finance and budgeting.

In addition, the school board was perceived to have the second-highest degree of actual control over five decision items in the following four categories: (a) personnel management; (b) capital expenditures; (c) organizational structure; and (d) community relations. It was perceived to have the least control over four decision items.

TABLE 1
Rank Order of Perceived Degree of Actual Control by Organizational Level

Decision Items	Item No.	Low 1	2	3	4	High 5
Finance and Budgeting						
Finance to a school	1	T	P	D	S /	B*
Finance in a school	2	B	S /	D	T	P
Finance of new programs	3	D	T	P	S	B
Additional finance	4	D	B	S	T	P
Capital Expenditures						
Building changes	5	T	P	D	S	B
School closure	6	T	P /	D	S	B
Special features	7	T /	D	P	B	S
Special schools	8	T	P	D	S	B
Equipment, Supplies, and Services						
Textbooks	9	B	P	S	T	D
Transportation	10	T	P	D	S	B
Major equipment	11	D	T	B	S	P
Classroom furnishings	12	D	B	T	S	P
Curriculum and Instruction						
Instructional methods	13	D	B	S	P	T
Curriculum content	14	P	B	S	T	D
Final marks	15	S	B /	D	P	T
Program evaluation policies	16	T	D	P	S /	B
Personnel Management						
Selection of a principal	17	P /	D	T	B	S
Selection of a teacher	18	D	T	B	S	P
Teaching assignments	19	B /	D	S	T	P
Teacher evaluation	20	T /	D	P	B	S
Student Management						
Student conduct	21	D	S	B	T	P
Student assessment	22	D	B	S	T	P
Student reporting	23	D	B	S	T	P
School discipline	24	D	B	S	T	P
Organizational Structure						
Number of teachers	25	T	D	B	P	S
School timetable	26	B /	D	S	T	P
Instructional time	27	T	B	S	P	D
Class size	28	D	T	S	B	P

*T = Teachers, P = Principal's Office, S = Superintendent's Office, B = School Board, D = Alberta Education Department
/ = Tie in Rank Order

TABLE 1 (continued)

Decision Items	Item No.	Low 1	2	3	4	High 5
Community Relations						
Parental involvement	29	D	S / B		T	P
Community use of a school	30	T / D		S	B	P
Parent advisory committee	31	D	B	S	T	P
School achievement	32	D	T	P	S	B
New Programs						
Implementation of pilot	33	D	T	P	S	B
Continuation of pilot	34	T	D	P	S	B
Language program	35	D	T	P	S	B
Special education	36	T	D	P	S	B
Policy and Decision Making						
School district policies	37	T	P / D		S	B
School philosophy	38	D	S	B	T	P
Teacher participation	39	D	B	T / S		P
School policies	40	D	B	S	T	P

TABLE 2
Summary of the Perceived Degree of Actual Control over Decisions by Organizational Level

Organizational Level	Frequency of rank order 1	2	3	4	5	Overall Mean
Principal's Office (P)	2	7	9	4	18	3.73
Superintendent's Office (S)	1	4	14	17	4	3.48
School Board (B)	4	12	6	5	13	3.28
Teachers (T)	14	7	3	14	2	2.58
Education Department (D)	19	10	8	-	3	1.95

Teachers. Teachers (Table 2) had the second-lowest mean score (2.58). Teachers were perceived to have the highest degree of actual control over only two of the 40 decision items. As indicated in Table 1, these two decision items pertained to the curriculum and instruction decision category. In addition, teachers were perceived to have the second-highest degree of actual control over 14 decision items: all four items in student management; two items in finance and budgeting; community relations; and policy and decision making. Also, they were perceived to have the least control over 14 decisions.

Alberta Education. Of the five organizational levels, Alberta Education was perceived to have the lowest mean score (1.95) on the degree of actual control (Table 2). It was perceived to have the highest degree of actual control over only three of the 40 decision items. As indicated in Table 1, each of the three items pertained to one of the following three decision categories: (a) equipment, supplies, and services; (b) curriculum and instruction; and (c) organizational structure. It was perceived to have the least control over 19 decisions, more than any other organizational level.

Discussion

These results are not surprising and appear to confirm that control over many educational decisions has shifted recently to the principal's office. For instance, one of the school districts studied adopted school-based budgeting more than five years ago. More recently, school-based staffing was adopted by two of the districts.

Overall, the principal's office was perceived to have a relatively high degree of actual control over all but one decision category, namely capital expenditures. The perceived degree of control by the principal's office exceeded that of the superintendent's office in six of the ten decision categories: (a) finance and budgeting; (b) curriculum and instruction; (c) student management; (d) organizational structure; (e) community relations; and (f) policy and decision making. The superintendent's office, however, was perceived to have greater control than the principal's office over the following decision categories: (a) capital expenditures; (b) equipment, supplies, and services; (e) personnel management; and (d) new programs. The school board was perceived to have a high degree of control over many of the same decision categories as the superintendent's office. Only two decision categories, student management and curriculum and instruction, were not controlled to any great extent by the school board.

Regarding teachers, the results might be expected because teachers work at the organizational level most directly involved in delivering services to the students. As a group, teachers were perceived to have a high degree of control over student management, curriculum and instruction, and policy and decision making. The results also might be predictable regarding Alberta Education because this study largely dealt with operational decision making, that is, matters pertaining to the day-to-day operations of schools.

Overall Degree of Preferred Control

Table 3 presents in rank order the degree of preferred control by organizational level for each decision item. The rank order of organizational levels from left to right indicates an increasing degree of control over the decision item. For example, regarding the first item (finance to a school), Alberta Education (D) had the lowest preferred control, while the superintendent's office (S) and the school board (B) were tied for the highest preferred control. The ranking by level was based on the percentage distribution of preferred control (should be) over educational decisions. Whenever two levels were favored to have the same extent of control, a slash (/) was used

to indicate that the levels were tied in rank order, although the "higher" organizational level was placed higher in ranking.

Table 4 provides a summary of the preferred control over educational decisions by organizational level. The ranking shows how many times each level was listed in a particular position in the rank order. The mean was calculated in the same way as described previously to determine the perceived degree of actual control (Table 2). The mean score thus indicates the overall degree of preferred control by the organizational level on a scale from one to five.

Principal's office. The organizational level with the highest mean score (3.88) was the principal's office (Table 4). It had the highest degree of preferred control over 17 of the 40 decision items, more than any other organizational level. As indicated in Table 3, these items pertained to the following decision categories: (a) student management; (b) community relations; (c) policy and decision making; (d) finance and budgeting; (e) personnel management; (f) organizational structure; and (g) equipment, supplies, and services.

Similar to the perceived degree of actual control, it was preferred that the principal's office have the highest degree of control over all four items in the student management category and over three items in each of the community relations and policy and decision making categories. Moreover, the principal's office was preferred to have the second-highest degree of control over six decisions, including two in curriculum and instruction.

Superintendent's office. The superintendent's office (Table 4) had the second-highest mean score (3.45). It was preferred to have the highest degree of control over eight of the 40 decision items. As indicated in Table 3, these items pertained to the following six decision categories: (a) personnel management; (b) new programs; (c) equipment, supplies, and services; (d) curriculum and instruction; (e) organizational structure; and (f) community relations. The superintendent's office was preferred to have the highest degree of control over two items each in personnel management and new programs.

In addition, the superintendent's office was preferred to have the second-highest degree of control over 11 decision items in the following categories: (a) finance and budgeting; (b) capital expenditures; (c) equipment, supplies, and services; (d) new programs; (e) personnel management; (f) organizational structure; and (g) policy and decision making. Respondents did not prefer the superintendent's office to have the least control over any decision items.

School board. The school board (Table 4) had the third-highest mean score (3.15). It was preferred to have the highest degree of control over ten of the 40 decision items. As indicated in Table 3, these items pertained to the following five decision categories: (a) capital expenditures; (b) finance and budgeting; (c) new programs; (d) equipment, supplies, and services; and (e) policy and decision making. The school board was preferred to have the highest degree of control over all four items in the capital expenditures

category; and over two items each in finance and budgeting and new programs.

In addition, the school board was preferred to have the second-highest degree of control over seven decision items in the following five categories: (a) community relations; (b) new programs; (c) curriculum and instruction; (d) personnel management; and (e) organizational structure. It was preferred to have the least control over six decision items.

Teachers. Teachers had the second-lowest mean score (2.75) of any organizational level (Table 4) on the degree of preferred control. They were preferred to have the highest degree of control over only two of the 40 decision items. As indicated in Table 3, these two decision items pertained to the curriculum and instruction decision category. In addition, teachers were preferred to have the second-highest degree of control over 15 decision items including all four items in student management, three items in policy and decision making, and two items each in finance and budgeting, and community relations. Teachers were preferred to have the least control over nine decisions.

Alberta Education. Alberta Education had the lowest mean score (1.78) on the degree of preferred control (Table 4). It was preferred to have the highest degree of control over only three of the 40 decision items. As indicated in Table 3, each of the three items pertained to one of the following three decision categories: (a) equipment, supplies, and services; (b) curriculum and instruction; and (c) organizational structure. Alberta Education was preferred to have the second-highest degree of control over one decision item in the capital expenditures category. Finally, Alberta Education was preferred to have the least control over 24 decisions, more than any other organizational level.

Discussion. Overall, the results indicated that major control over most decisions was preferred to be held by the principal's office, the superintendent's office, and the school board, while teachers and Alberta Education were preferred to have the least control over most decision categories.

In general, the overall perceived degree of actual and preferred control by the principal's office, the school board, teachers, and Alberta Education were similar for most decision categories. However, the findings suggest that respondents desired to see some changes with respect to control over specific educational decisions by the superintendent's office, that is, less control over some decisions but greater control over others.

Implications

Leadership of the principal's office. The high degree of perceived control by the principal's office suggests that the role of the principal is changing; new opportunities exist for a principal to exercise increasing leadership in education. In reviewing the effective-schools movement, Sackney (1986, p. 15) suggested that "bottom-up, school-specific change efforts" require a participatory or democratic approach that involves a high degree of staff collaboration, group planning, and shared decision making. Principals may

TABLE 3
Rank Order of Preferred Control by Organizational Level

Decision Items	Item No.	Low 1	2	3	4	High 5
Finance and Budgeting						
Finance to a school	1	D	T	P	S /	B*
Finance in a school	2	B	S	D	T	P
Finance of new programs	3	D	T	P	S	B
Additional finance	4	D	B	S	T	P
Capital Expenditures						
Building changes	5	T	D	P	S	B
School closure	6	T	P /	D	S	B
Special features	7	D	T	S	P	B
Special schools	8	T	P	S	D	B
Equipment, Supplies, and Services						
Textbooks	9	B	S	P	T	D
Transportation	10	T	P	D	S	B
Major equipment	11	D	B	T	S	P
Classroom furnishings	12	D	B	T /	P	S
Curriculum and Instruction						
Instructional methods	13	B /	D	S	P	T
Curriculum content	14	B	S	P	T	D
Final marks	15	B	S	D	P	T
Program evaluation policies	16	D	T	P	B	S
Personnel Management						
Selection of a principal	17	P /	D	T	B	S
Selection of a teacher	18	T /	D	B	S	P
Teaching assignments	19	B /	D	S	T	P
Teacher evaluation	20	D	T	B	P	S
Student Management						
Student conduct	21	D	S	B	T	P
Student assessment	22	D	B	S	T	P
Student reporting	23	D	B	S	T	P
School discipline	24	D	S /	B	T	P
Organizational Structure						
Number of teachers	25	D	T	B	P	S
School timetable	26	D	B	S	T	P
Instructional time	27	T	B	P	S	D
Class size	28	D	T	S	B	P

*T = Teachers, P = Principal's Office, S = Superintendent's Office, B = School Board, D = Alberta Education Department
/ = Tie in rank order

TABLE 3 (continued)

Decision Items	Item No.	Low 1	2	3	4	High 5
Community Relations						
Parental involvement	29	D	S	B	T	P
Community use of a school	30	D	T	S	B	P
Parent advisory committee	31	D	S	B	T	P
School achievement	32	T	D	P	B	S
New Programs						
Implementation of a pilot	33	D	T	P	B	S
Continuation of a pilot	34	D	T	P	B	S
Language program	35	T	D	P	S	B
Special education	36	T	D	P	S	B
Policy and Decision Making						
School district policies	37	D	T /	P	S	B
School philosophy	38	D	S	B	T	P
Teacher participation	39	D	B	S	T	P
School policies	40	D	B	S	T	P

TABLE 4
Summary of the Preferred Control over Decisions by Organizational Level

Organizational Level	Frequency of rank order 1	2	3	4	5	Mean
Principal's Office (P)	1	3	13	6	17	3.88
Superintendent's Office (S)	0	9	12	11	8	3.45
School Board (B)	6	9	8	7	10	3.15
Teachers (T)	9	11	3	15	2	2.75
Education Department (D)	24	8	4	1	3	1.78

enhance school effectiveness by increasing the participation of teachers, parents and other stakeholder groups in the process of decision making.

Some respondents felt that the principal's office had more control over finance and budgeting at the school level than was preferred. Trustees and administrators, however, felt that principal should have more control over capital expenditures and personnel management. The principal's control over some decision areas may well continue to increase, but it may be curtailed in others. There might also be a need for school districts to consider adopting new approaches to gain control over decision areas to counteract

inertia and maintain a proper balance. A high concentration of control at one organizational level may reduce the balance of control in the educational system and increase resistance to change and innovation.

In view of the high degree of control by the principal's office over operational decisions, it is important for school districts to ensure that checks and balances exist. Peterson (1984) identified six mechanisms of administrative control over managers in educational organizations, four of which were hierarchical, one social, and one extraorganizational. The four hierarchical controls were supervision, input control (resources), behavior control (structuring of activities), and output control (monitoring and evaluation). The other two controls were selection-socialization (ongoing training) and environmental control (need for community support). It may be increasingly important for school districts to ensure that principals work toward achieving school district objectives and that they are held accountable for their activities. As a public enterprise, education is too important to be dominated by one organizational level.

With respect to school-based staffing, the principal should respond appropriately to school district objectives, the needs of school programs, and the needs of the community, while avoiding the temptation to make decisions on the basis of administrative or political expediency. The selection and assignment of a teacher should be based primarily on the needs of the instructional program, rather than on the needs of an extracurricular program. In addition, school-based staffing requires a mechanism for the placement of teachers who have experienced some difficulties in a particular school situation and may need a change to a more appropriate assignment.

There are times, though infrequently, when a principal's desire to make a decision might be curtailed in the best interests of the whole district. For example, the assignment of a teacher to a position appropriate to his or her qualifications and experience might well be a school system priority. It may be vitally important for maintaining high teacher morale in the district or maintaining high instructional standards, even though such a decision might be contrary to a principal's preference. Similarly, under special circumstances, such as the implementation of new programs, upholding school district priorities might be more important than maintaining a principal's autonomy in a particular case or decision area.

Decentralization of control. If a principal is wise in using the powers of the office, he or she will actively seek the advice and guidance of all stakeholders. The literature supports the participation of teachers in the decision making process whenever it is desirable (Hoy & Sousa, 1984; Owens, 1981; Scott, 1981). Yet the results of this study offer some support to the view of Meyer and Rowan (1983) that teacher professionalism (autonomy) is largely a myth except in matters pertaining to the classroom. While it may not be desirable to mandate a participatory style for principals, superintendents might encourage principals to share their power with stakeholder groups. Opportunities to participate in decision making, when-

ever it is desirable for both teachers and parents, could increase the effectiveness of decision making in a school.

Role of the school board. The least desirable consequence of the high degree of control by the principal's office would be the abdication by the board of trustees of its duties and responsibilities. As the elected body responsible for policy making and fiscal and budgetary approval, the school board serves as the final authority at the local level on all school matters. It must ensure that all school district services are provided on a fair and equitable basis to all groups and individuals within the district.

Accordingly, school boards might adopt various methods for keeping principals on a course of action established by board policy. Board policies should give direction to the whole district and provide a framework for principals to work within. Such policies should direct the principal to be proactive in seeking and maintaining community support. Most important, appropriate mechanisms and communication networks need to be developed within the school community. Adequate monitoring and follow-up activities need to be carried out by principals and central office administrators, if accountability to the school board and the community are to be met.

On balance, trustees should avoid getting too closely involved with administrative or operational matters, yet they should recognize and accept the need to get involved in matters of grievance or appeal requiring political decisions. In this regard, it is important to define the general spheres of influence or powers of trustees and administrators. Overall, the increase in control by the principal's office need not be granted at the expense of the school board. Perhaps the real danger is the perception on either side that a gain for one group means a loss of power for the other.

Role of the superintendent. The decentralization of control to the school level has major implications for the role of the superintendent. First, the superintendent's office might serve as an effective link between school programs and the school board. Second, it might ensure that appropriate mechanisms exist for policy making, decision making, and policy implementation. Third, superintendents need to consider how their leadership behavior or management style might enhance or impede organizational effectiveness. Fourth, superintendents need to consider how accountability might be built into various levels of the total system.

In discussing organizational leadership from the perspective of the superintendent, Pitner and Ogawa (1981) found that the superintendent's work largely involved two broad areas of activity: communicating and exerting an organizational influence within the constraints of social and organizational structures. They also challenged conventional views of leadership and reported that broad contextual influences, societal, and extraorganizational factors, have a major impact on superintendent performance. Such factors define the "docile" dimensions of leadership, according to Pitner and Ogawa (p. 62).

At a practical level, the superintendent's office may have to break with traditional decision making approaches. For instance, it might rely less on

hierarchical authority and adopt various models (joint decision making, consensus, collegial model, delegation of authority) to facilitate decision making processes, even in a time of considerable organizational uncertainty and scarcity of resources. Such a course of action would be consistent with the views of Thompson (1967) and Hasenfeld (1983), who argued that educational organizations operate with less emphasis on formal hierarchy than other organizations. It would also be consistent with higher expectations for participation in educational decision making (Cox & Wood, 1980; Hoy & Miskel, 1978). Failure of the superintendent's office to implement democratic and participatory approaches to school decision making might indeed have serious consequences for a school district.

Concluding Comments

Overall, respondents were satisfied with control over educational decisions and preferred few changes. The results of this study, however, indicate that trustees and administrators preferred changes in some decision areas. They felt that the principal's office should have more control over capital expenditures and personnel management, but less control over finance and budgeting. They also felt that teachers should have more control over four decisions areas: personnel management, student management, community relations, and policy and decision making. However, they preferred that the provincial education department should have less control over finance and budgeting, capital expenditures and equipment, supplies and services.

Because this study was delimited to the urban context in Alberta, the results might well be different in another setting. Therefore, caution should be exercised in interpreting or explaining control over educational decisions in Alberta only on the basis of this study.

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Relationships Among Teachers' and Students' Thinking Skills, Sense of Efficacy, and Student Achievement

This study examined relationships between and among teachers' and students' sense of efficacy, thinking skills, and student achievement. Twenty-four teachers were selected from all grade 3 and 6 teachers in three school districts on the basis of their sense of personal and teaching efficacy scores. The teachers and their students completed a test of reasoning skills and an efficacy scale at the beginning and and of the school year. Students also completed the Canadian Achievement Tests and a measure of their teachers' classroom behavior; teachers were also interviewed at the beginning and end of the year. Relationships among student thinking, efficacy, and achievement were clearly demonstrated. Relationships between teacher and student measures were ambiguous but suggested that teachers' personal efficacy beliefs at the beginning of the year do affect student achievement, particularly at the grade three level. Factors affecting sense of efficacy were examined, and there was some indication that higher efficacy teachers tend to have a more pragmatic philosophical orientation toward teaching.

Two concepts receiving increasing attention in recent research on teaching and learning are teachers' sense of efficacy, which "refers to the extent to which teachers believe that they have the capacity to affect student performance" (Ashton, 1984, p. 28), and the development of thinking skills. There is reason to believe that teachers with high efficacy beliefs behave and think differently in the classroom than do teachers with low efficacy beliefs, and that this behavior results in greater student achievement (Ashton & Webb, 1986). There is also the belief that "the purpose which runs through and strengthens all other educational purposes—the common thread of education—is the development of the ability to think" (Morgenstern & Renner, 1984, p. 639).

The construct of self-efficacy was initially proposed by Bandura in 1977. Bandura hypothesized that people's behavior is determined not only by their generalized beliefs about action-outcome relationships (a belief that certain behaviors can lead to certain outcomes), but also by their sense of self-efficacy (a belief that they have the requisite skills to produce those out-

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comes). Teachers' sense of efficacy was first conceptualized in two Rand Corporation studies evaluating 100 United States federal programs. The authors concluded that teachers' sense of efficacy was one of the best predictors of "percentage of project goals achieved; amount of teacher change; improved student performance; and continuation of both project methods and materials" (cited in Denham & Michael, 1981, p. 45).

In these studies, sense of efficacy seemed to reflect the extent to which teachers believe they have the capacity to affect student performance. In their description of the construct of sense of efficacy, Denham and Michael (1981) suggest that one way to interpret the findings of these studies is to "argue that teachers who maintain that they are able to teach students do, indeed, manage to teach them" (p. 45). Sense of efficacy is thought to be an intervening variable influencing teachers' actions, and is presumed to encompass both a belief in action-outcome relationships and personal perceptions of one's own ability to influence those outcomes.

In their review of the efficacy literature, Denham and Michael identified a number of consequences of sense of efficacy in addition to those of improved student achievement. From the research relating sense of efficacy to teacher behaviors, for example, they concluded that "teachers reporting a low sense of efficacy did indicate a preference for custodial control more often than did teachers with an average or high sense of efficacy" (p. 48). Also "teacher sense of efficacy is one of the variables related to the drop-out of teachers" (p. 49). Similarly, Glickman and Tamashiro (1982) identified significant relationships between sense of efficacy and teacher survival rate. Practicing first- and fifth-year teachers revealed a stronger sense of efficacy than did former teachers. Evans and Tribble (1986) identified a significant correlation between efficacy scores and commitment to teaching in preservice teachers. Wise, Darling-Hammond, McLaughlin, and Bernstein (1985) concluded that

> A sense of efficacy is an important element of the link between knowledge and behavior. This sense affects performance by generating coping behavior, self-regulation of refractory behavior, perseverance, responses to failure, growth of intrinsic interest and motivation, achievement strivings, and career pursuits (p. 69).

Gibson and Dembo (1984) developed a 30-item scale to measure the construct of teacher efficacy. Their research addressed three issues: (a) to identify the dimension of teacher efficacy and relate these to Bandura's concept of self-efficacy; (b) to differentiate teacher efficacy from other constructs; and (c) to examine whether high and low efficacy teachers exhibit differential patterns of behaviors in the classroom. They identified two clearly differentiated factors. The first was a sense of personal teaching efficacy, that is, the teacher's sense of personal responsibility in student learning and/or behavior, which corresponds to Bandura's self-efficacy dimension. The second factor "represented the teachers' sense of teaching efficacy, or belief that any teacher's ability to bring about change is significantly limited by factors external to the teacher, such as the home environment, family background and parental influences" (p. 574). This second factor clearly corresponds to Bandura's outcome expectancy dimension. Their results also

verified a distinction between teacher efficacy and two other constructs (verbal ability and flexibility) already identified in the research as present in effective teachers, and "lent validation support for the use of the teacher efficacy scale to measure the construct of teacher efficacy" (p. 576).

Using an ethnographic observational and interview approach, Ashton and Webb (1986) studied efficacy in two Florida schools over a period of two years. The authors define efficacy as "teachers' situation—specific expectations that they can help students learn" (p. 3), but suggest also that it is important to distinguish between the two dimensions—a belief that teachers can help students learn, and the belief that they personally can help students learn. In their chapter discussing the relationships between sense of efficacy and student achievement, Ashton and Webb state:

> Our findings strongly support the hypothesis that teachers' sense of efficacy is related to student achievement. Furthermore, the results support the assumption that teacher's efficacy attitudes are situation-specific.... Efficacy beliefs are not unidimensional and, consequently, can be expected to have different relationships to different subject matter, depending on teachers' beliefs about the subject being taught and the students in the class. (pp. 138-139)

In their final statement the authors conclude "that the promotion of a high sense of efficacy in teachers and students must become an educational aim as important as academic achievement" (p. 176).

Investigation into the nature and teaching of "thinking" has received much attention since the early 1970s. There has been rapid growth in the number of programs designed to teach thinking skills, and the instruments for measuring these skills are even more numerous. One of the early researchers in this field was Lipman (1983) who, in 1970, studied two randomized groups of fifth graders at Rand School in Montclair, N.J. After nine weeks, the groups who had been taught specific reasoning skills had gained 27 months in mental age on logical reasoning. Shortly thereafter the Philosophy for Children movement emerged as a promising approach to the teaching of thinking skills.

Stimulated by Lipman's work, other experimental studies followed. In 1975 the Newark experiment conducted by Haas (1975) indicated that over ten months the experimental students in grades 5 and 6 who had been taught thinking skills on the Lipman model gained eight months on the Metropolitan Achievement Test reading comprehension subtest, in contrast with five months gain for the control group. Shipman (1978) demonstrated that after one year of teacher training and implementation of a thinking skills program, significant improvement in formal reasoning occurred in three out of four grade levels. Simon (1981), using Philosophy for Children materials, found them to be effective with emotionally handicapped children. In 1978 Cinquino tested 53 academically talented students using Philosophy for Children materials and identified positive results in achievement comparing pretests and posttests.

Thus it has been demonstrated that there are relationships between teachers' sense of efficacy and student achievement, but that these relationships may be subject- and/or context-specific. Relationships between think-

ing skills and student achievement have been clearly demonstrated. However, these studies are relatively new, and none of this research has been conducted in Canada. Also, there are large "gaps" in the research. None of the research has examined the effects of teachers' sense of efficacy on students' thinking skills or students' beliefs about the effects of their own efforts; nor have any of the studies examined the effects of teachers' thinking skills on these outcomes.

Purpose of the Study

The major purpose of this study was to examine the relationships among sense of efficacy, thinking skills, and student achievement. Specific research questions were

1. What is the relationship between teachers' sense of efficacy and their scores on a thinking/reasoning test?
2. What are the relationships among students' sense of efficacy, student achievement, and student scores on a thinking/reasoning test?
3. What is the relationship between teachers' sense of efficacy and (a) student achievement, (b) student scores on a thinking/reasoning test, and (c) students' sense of efficacy?
4. What is the relationship between teachers' scores on a thinking/reasoning test and (a) student achievement, (b) student scores on a thinking/reasoning test, and (c) students' sense of efficacy?
5. Which of the study variables are the best predictors of student achievement and students' thinking/reasoning skills?
6. What are some of the factors which influence teachers' sense of efficacy?

Method

Measures

Teachers' sense of efficacy was assessed by the 16-item scale created and validated by Gibson and Dembo (1984). The scale has an internal reliability score of .78 for the personal dimension of efficacy, .75 for the teaching dimension, and .79 for the total of the 16 items. Because no appropriate measure of pupils' sense of efficacy was found, a four-item measure was developed by the researchers. Using the Rand items as a basis, but changing the wording to be more appropriate for elementary school children, two Likert items were designed to measure the students' beliefs about whether most students can learn if they really try hard, and two addressed their beliefs about the pay-off of their own efforts. These items were as follows:

1. Most kids can do well in school if they work and study hard.
2. When I really try hard I get good grades in school.
3. If I get a better grade than usual on an assignment it's probably because I got lucky.
4. Sometimes kids can't get good grades no matter how hard they work and try.

Both teachers' and students' thinking skills were measured by the New Jersey Test of Reasoning Skills (NJTRS, 1983). The selection of this instrument for measuring thinking skills was based on the following considerations. This test concentrates on reasoning in language; it is simple and clearly written; and the skills tested are those which correspond to elementary and essential operations in the domain of logic. The reliability of the NJTRS compares favorably with established tests, ranging from .84 and above in grade 5 to .91 and above in grade 7. It has also been used with adults in spite of the rather juvenile content of the items (Lipman, personal communication, April 8, 1986).

The wide range of reasoning skills tested in the NJTRS made it the instrument of choice over others. The 28 skills identified range from basic syllogistic logic, through questioning strategies, to transitive and symmetrical relationships. The fact that this particular test of thinking skills was a product of the Philosophy for Children movement resulted in a wider interpretation of the term "thinking" than other tests allowed.

Student achievement was measured by the Canadian Achievement Tests Levels 12, 13, and 16. These tests are widely used in Canada by local school jurisdictions to assess student achievement in various language and mathematics skills and are routinely used by one of the school jurisdictions in the study.

Students' perceptions of their teachers' classroom behavior was assessed by Our Class and Its Work (OCIW, Waxman & Eash, 1983). The authors concluded that "students' judgments about their teachers' behavior agree significantly with the judgments of experienced classroom observers" (p. 321). The OCIW predicted student achievement gains and discriminated between teachers whose students obtained higher and lower levels of achievement and between teachers who received higher and lower ratings from their principals. Total test reliability is .85 (Cronbach's Alpha); reliability coefficients of the various subscales ranges from .84 to .92 (Waxman & Eash, 1983, p. 322). In addition, the test offers a considerable advantage over observational techniques in terms of economy and efficiency.

Interviews

A 20-60-minute semistructured interview was conducted with each teacher at the beginning and end of the study. The interviews were designed to address teachers' perceptions of their efficacy, factors that enhance or detract from their sense of efficacy, their teaching style and perceived role, and in general to obtain a more in-depth feeling for factors that might influence the more quantitative results of the study. All interviews were taped and transcribed verbatim.

Sample Selection

In June of 1984, the Teacher Sense of Efficacy Scale was mailed to all 77 grade 3 and 6 teachers in three school jurisdictions in Southern Alberta. From the 65 teachers (84%) who completed the scale, a sample of 24 teachers was selected for further participation.

The initial intent was to select the 12 teachers who scored highest and the 12 who scored lowest on both the personal efficacy and teaching efficacy dimensions of the Teacher Sense of Efficacy Scale. However, of the 12 teachers who scored the highest on the personal efficacy scale, only four were in the top 12 on the teaching efficacy scale. This result was not surprising given Ashton and Webb's (1986) comment that "teachers' scores on the two Rand items were not significantly correlated" (p. 8). Ashton's (1984) research findings suggested that teachers who are low on personal efficacy have the most negative effect on their students. Therefore, teachers were selected for the study on the basis of their personal efficacy score, unless the teachers who were high on personal efficacy were below the median on teaching efficacy. Using this process a total of 12 "high efficacy" teachers and 12 "low efficacy" teachers were asked and agreed to participate further in the study. Three teachers preferred not to participate because of an impending maternity leave, an impending retirement, and a new teaching assignment. They were replaced with the three teachers with the next highest or lowest scores as appropriate.

Procedure

Early in the fall of 1985 the researchers administered the CAT, the NJTRS, and the Children's Efficacy Scale to the students in the classrooms of the 24 study teachers. At the same time, each teacher completed the NJTRS and the personal interview. The testing procedure was repeated at the end of the school year, that is, in May or June 1986. At that time the students also completed the OCIW assessment of their teachers. Teachers were interviewed again, but in this case the interview focused on their definitions of success, their feelings of success over the past year, and factors which influenced that perception of success.

Results

In order to confirm that the Efficacy Scale did in fact measure two separate dimensions of efficacy, a principal components factor analysis with Varimax rotation was performed on the efficacy scores of the 65 teachers in the original sample from which the sample for this study was selected. With only default restrictions on the program, five factors were produced, with the variables clustered in a manner not inconsistent with the two groupings identified by Gibson and Dembo (1984). When the analysis was forced to result in only two factors, the items loaded on the same two factors identified by Gibson and Dembo, clearly differentiating between the personal and the teaching efficacy dimensions.

Analysis of Teacher Data

Descriptive information about the 24 teachers in the study is shown in Table 1. Interestingly, the sample had more males than females. One can only speculate about the reasons for this because the percentages do not appear to be representative of the population of elementary teachers in Southern Alberta. In the original sample of 65 teachers (84% of all grade 3 and 6 teachers) from whom the 24 were selected, 24 (36.4%) were males

and 40 (61.5%) were females (the gender of one teacher was not stated). However, teacher gender was significantly related to personal efficacy scores for those 65 teachers. Of the 20 teachers in the original sample who were above the median on both personal and teaching efficacy, 15 were females and five were males; of the 21 teachers who were below the median on both dimensions seven were females and 14 were males. Thus males appear to have been over represented in the study sample primarily because they were concentrated at the lower end of the efficacy measures. All five males in the upper group ended up in the study sample as did eight of the 14 males in the lower group.

Generally, it appears that teachers have a stronger belief in their personal efficacy than in the general ability of teachers to effect certain outcomes. In both the fall testing and the spring testing for the 24 sample teachers, personal efficacy scores were significantly higher than teaching efficacy scores (for fall $t=6.55$; $p<.01$; for spring $t=4.21$; $p<.01$). It is also interesting to note that there was greater variability among the teachers' beliefs about the efficacy of teachers in general than among their beliefs about their own personal sense of efficacy.

Correlations between teachers' efficacy scores at the beginning of the year and at the end of the year ($N=23$) were .73 on the personal dimension

TABLE 1
Descriptive Information about Teachers in the Study

			N (%)	M	SD
Sex -	Females		11 (45.8)	---	---
	Males		13 (54.2)	---	---
Grades -	2		1 (4.2)	---	---
	3		8 (33.3)	---	---
	4		1 (4.2)	---	---
	5		– (0.0)	---	---
	6		10 (41.7)	---	---
	Split 3/4		1 (4.2)	---	---
	Split 5/6		3 (12.4)	---	---
Efficacy Scores[1]					
	Fall -	Personal	24	4.76	0.72
		Teaching	24	3.74	1.07
		Overall	24	4.32	0.81
	Spring -	Personal	23	4.93	0.69
		Teaching	23	4.00	1.20
		Overall	23	4.52	0.79
New Jersey Test of Reasoning Skills[2]					
	Fall		24	43.50	3.76

[1]Mean scores, based on a 6-point scale, where 6 denotes a high efficacy response and 1 denotes a low efficacy response.
[2]Total number of items correct out of 50.

and .86 on the teaching dimension. Both of these are significant at the .01 level. However, although the differences were not statistically significant, teachers' efficacy scores, both personal and teaching, were higher at the end of the year than at the beginning of the year.

The efficacy scores for grade three teachers were consistently higher than for grade 6 teachers. However, these differences were not statistically significant except in the case of the teaching efficacy scores at the end of the year where the mean score of grade 3 teachers ($N=9$) was 4.56 and for grade 6 teachers ($N=13$) it was 3.20 ($t= 2.74$; $p<.05$). Correlations between teachers' efficacy scores and their scores on the NJTRS were not significant for either dimension of efficacy or at either time of the year. In order to maximize differences between the high and low efficacy teachers, they were divided into three equal-size groups on the basis of beginning-year efficacy scores on each of personal and teaching efficacy. The high group for personal efficacy included teachers whose efficacy scores were 5.33 or above, while the bottom group's scores were 4.44 or below. For teaching efficacy, the high group included those teachers whose efficacy scores were 4.29 or above, while the bottom group's scores were 3.00 or below. Teachers in the high efficacy groups had higher mean scores on the NJTRS than did teachers in the low efficacy group. The difference was not statistically significant for the personal dimension of efficacy, but it was on the teaching dimension ($t=2.14$; $p=.05$).

Analysis of Student Data

Descriptive information about the total sample of students is shown in Table 2. Of the 584 students in the 24 classrooms in the study, 49.8% were female and 50.2% were male. Because of changes that occurred in teaching assignments, there was one grade 2 class and one grade 4 class in the sample; these classrooms were not included in the analysis of the student data. Also, the grades 4 and 5 students in the two split grade classrooms were eliminated from this analysis, leaving a total of 205 grade 3 students and 290 grade 6 students in 22 classrooms.

As one of the school districts administered the Canadian Achievement Tests routinely at the end of each year, it did not seem prudent for us to retest these children at the beginning of the year. Pretest scores were therefore based on different levels of achievement tests in the three districts; that is, in one district students wrote the grade 2 test at the end of grade 2, and in the others the students wrote the next level of test just two months later at the beginning of grade 3. Therefore, gain scores were not comparable across districts, and posttest scores were used as the measure of student achievement. However, because school district appeared from the preliminary analysis to be a factor in student achievement, it was used as a variable in the multiple regression analyses.

It was hoped that the measure of students' sense of efficacy would clearly differentiate between the students' personal sense of efficacy and their beliefs about students in general, in a manner similar to the teacher scale. However, it was not possible on the basis of a factor analysis of the results

TABLE 2
Descriptive Information about Students by Grade Level

Measure	Total Sample (584) M	Total Sample (584) SD	Grade 3 (205) M	Grade 3 (205) SD	Grade 6 (290) M	Grade 6 (290) SD
Efficacy Scores[1]						
Fall	3.27	0.44	3.14	0.44	3.37	0.39
Spring	3.39	0.40	3.41	0.38	3.40	0.38
New Jersey Test of Reasoning Skills[2]						
Fall	27.10	8.05	21.51	5.51	30.79	7.72
Spring	30.63	8.31	25.56	6.77	34.26	7.57
Canadian Achievement Test Scores - Fall[3]						
Reading Average	485.50	73.69	426.01	35.19	532.30	61.26
Language Average	518.94	82.52	462.84	51.26	567.20	69.48
Math Average	418.31	73.02	354.13	34.87	467.23	53.08
Total	448.18	84.99	377.83	38.89	502.08	68.38
Canadian Achievement Test Scores - Spring[3]						
Reading Average	512.50	71.93	464.33	45.78	550.40	67.38
Language Average	542.12	74.67	499.32	55.29	575.58	71.89
Math Average	458.60	67.07	412.25	37.93	498.69	56.48
Total	485.68	80.00	432.86	50.01	526.86	74.26
Our Class and its Work - Spring[4]						
Total	2.70	0.22	2.78	0.20	2.66	0.20

[1]Mean scores, based on a 4-point scale, where 4 denotes a high efficacy response and 1 denotes a low efficacy response.
[2]Total number of items correct out of 50.
[3]Standard scale scores.
[4]Mean scores, based on a 4-point scale, where 4 denotes the most positive response and 1 denotes the most negative response.

to determine whether students differentiated between the two dimensions. Therefore, total efficacy scores were used for students.

Correlations between students' scores on the various measures for each of grades 3 and 6 are shown in Table 3. Total scores and subscale scores on the CAT were highly correlated with those on the NJTRS, which is consistent with results of the American research. Student achievement scores were also significantly correlated with the students' sense of efficacy, suggesting perhaps that students who believe in their ability to achieve do in fact do so. Correlations between students' sense of efficacy and NJTRS scores were also statistically significant, and for grade 3 students, correlations between achievement measures and OCIW scores were significant, although smaller than other correlations.

Teacher-Student Relationships

In order to determine relationships between teachers' sense of efficacy and teachers' thinking skills, and each of the student measures, the teacher was assigned the class mean scores for each of the student achievement, student thinking, student sense of efficacy, and student perceptions measures. With the class (or teacher) as the unit of analysis, *N*s become small, reducing the likelihood of statistical significance. Results of the correlations are presented in Table 4. At the grade 3 level teachers' feelings of personal efficacy at the beginning of the year were significantly correlated with student achievement and student sense of efficacy. For grade 6 teachers the only significant relationships were between teachers' and students' sense of efficacy. Teachers' scores on the NJTRS were not significantly related to any of the student outcomes at either grade level.

TABLE 3
Correlations Among Student Scores

Grade 3 (N = 169-192)

Student Measure	CAT	Rdg.	Lang.	Math.	NJTRS	Eff.	OCIW
Total CAT Score	1.00	.94**	.88**	.94**	.64**	.32**	.19**
Reading Subscore		1.00	.79**	.81**	.61**	.28**	.19**
Language Subscore			1.00	.76**	.54**	.30**	.19**
Mathematics Subscore				1.00	.63**	.30**	.15*
NJTRS					1.00	.17*	.07
Efficacy						1.00	.11
OCIW							1.00

Grade 6 (N = 239-264)

Student Measure	CAT	Rdg.	Lang.	Math.	NJTRS	Eff.	OCIW
Total CAT Score	1.00	.88**	.91**	.91**	.72**	.21**	.01
Reading Subscore		1.00	.75**	.69**	.71**	.14*	.02
Language Subscore			1.00	.77**	.66*	.22**	.03
Mathematics Subscore				1.00	.60**	.25**	-.01
NJTRS					1.00	.13*	.03
Efficacy						1.00	.27**
OCIW							1.00

* $p < .05$
** $p < .01$

Two sets of stepwise multiple regression analyses were performed in order to determine which of the study variables were best able to account for differences in student achievement scores. The first regression used the class as the unit of analysis and the class mean CAT scores as the dependent variable. Independent variables were the teacher measures: sex, beginning of year personal and teaching efficacy scores, NJTRS scores, and the mean class OCIW scores. For grade 3, two of the five independent variables entered the regression (see Table 5). Teachers' personal efficacy entered on step one, accounting for 54% of the variance; the class OCIW scores (a measure of student assessment of the teacher) entered next, increasing the variance accounted for by 30%. None of the variables entered the regression analysis for grade 6. When each of the Reading, Language, and Mathematics subscale averages was used as the dependent variable, with the same independent variables, similar results were obtained. For grade 3, teachers' personal efficacy score was the only measure to enter the regressions on Reading and Math averages; it was the first to enter the regression on Language averages, followed by the OCIW scores and the NJTRS. No variables entered any of the regressions for grade 6.

The second regression used students' individual CAT scores as the dependent variable and students' NJTRS and efficacy scores as independent variables. For reasons indicated earlier, school district was also included as an independent variable. The results of the regression analyses are presented in Table 6. For grade 3, three variables entered the equation, together accounting for 49% of the variance in student achievement scores. The NJTRS alone accounted for 41% of the variance. For grade 6 students, school district was not a factor in student achievement. The NJTRS alone accounted for 50% of the variance in student achievement; students' sense of efficacy added another 2%.

Interview Analysis

Interviews with teachers were conducted in part to help explain the study findings and in part to discover factors that might influence the teachers' feeling of efficacy. The teachers' beliefs about the efficacy of teachers in general seemed to be higher according to the interview results than from the results of the efficacy scales. In response to the question, "Do you believe that teachers have a major impact on student learning," 16 of the 24 teachers indicated, "absolutely yes" with no qualifiers, or gave some version of that statement. Only four of the teachers indicated that they believed teachers have a minimal influence on student learning or that other influences are greater. The teaching efficacy beliefs of three of these teachers were also among the lowest on the efficacy scale.

There was much greater variability in teachers' verbalized beliefs about their personal efficacy. Perhaps modesty or self-consciousness was a factor in responses to this question because only seven teachers said yes without any qualifiers. Eight teachers listed many qualifiers or denied the impact of their own abilities, expressing their views this way:

TABLE 4
Correlations Between Teacher Scores and Class Average Scores

Grade 3 Class Mean Scores (N = 9)

Teacher Scores	CAT	Rdg.	Lang.	Math.	NJTRS	Eff.	OCIW
Personal Efficacy-Beg.	.78**	.76**	.72*	.76**	.36	.59*	.00
Personal Efficacy-End	.16	.27	.06	.32	.08	.40	-.61*
Teaching Efficacy-Beg.	.54	.56	.48	.54	.32	.28	.07
Teaching Efficacy-End	.08	.14	.00	.16	.28	.00	.06
NJTRS	.22	.25	.04	.43	.34	.26	-.26

Grade 6 Class Mean Scores (N = 13)

Teacher Scores	CAT	Rdg.	Lang.	Math.	NJTRS	Eff.	OCIW
Personal Efficacy-Beg.	.20	.14	.28	.18	-.05	.51*	.29
Personal Efficacy-End	.09	.00	.10	.08	-.06	.54*	.13
Teaching Efficacy-Beg.	.20	-.03	.31	.29	.03	.54*	.10
Teaching Efficacy-End	.20	-.02	.31	.24	.05	.53*	-.01
NJTRS	-.36	-.47	-.25	-.32	-.37	-.10	-.04

* $p < .05$
** $p < .01$

TABLE 5
Results of Stepwise Regression Analysis on Grade 3 Students' CAT Scores Using Teacher (Class) Measures as Independent Variables

VARIABLES ENTERING	F	df	p
Personal Efficacy Beginning of Year	9.39	1,6	.022
Class OCIW Score	18.87	2,5	.005
$R^2 = .84$			

I think so with some students. There are always ones that I feel I haven't had the impact on that I wanted to have. You wonder if you did everything you could have done for them.

Sometimes it's hard to tell whether you taught them or whether they already knew and you've just reviewed the material.

I think ... I think ... maybe I can.

I think that some individuals who have had certain experiences ... I have to say I have difficulty reaching them.

TABLE 6
Results of Stepwise Regression Analysis on Students' CAT Scores Using Student Measures as Independent Variables

	Grade 3 (N = 176)		
VARIABLES ENTERING	F	df	p
Student NJTRS	122.94	1,174	.000
School District	76.70	2,173	.000
Students' Efficacy Scores	58.12	3,172	.000
R^2 = .49			

	Grade 6 (N = 248)		
VARIABLES ENTERING	F	df	p
Students' NJTRS	250.50	1,246	.000
Students' Efficacy	134.46	2,245	.000
R^2 = .52			

Most (five out of seven) of the teachers who expressed a strong sense of personal efficacy during the first interview also did so at the end of the year. However, there were situations which had caused some teachers to change somewhat. For example, one person who had changed from being highly tentative about his sense of efficacy at the beginning of the year to being absolutely positive at the end described "one of those happy years":

> *I've had an extremely positive class. The kids are, I would say, quite responsible as far as the academics go. And since I don't have to harp on that I can spend time dealing with the social skills and having a good time.*

On the other hand, a teacher whose sense of efficacy had decreased dramatically said, "I never meet my own expectations," and described a situation in which he was new to the grade level and from which he had a prolonged absence as being detrimental because of the difficult adjustment for students and the importance of the early interactions.

We asked the teachers to tell us about the factors or situations that enhanced or detracted from their sense of being successful in influencing student learning. These responses fell readily into four categories which were labeled student factors, teacher factors, school factors, and home or community factors. Six teachers identified primarily student factors that enhanced their efficacy, and three teachers identified student factors that detracted from their sense of efficacy. Examples of factors considered to be student factors were comments such as the following:

Whatever personality traits the child is bringing into the classroom—if he's, well, let's say lazy—there are kids that just need a lot of prodding and you prod and whatever positive motivation you try and try and try you are never going to change the child from what he is.

One is the child's own limitations. If he has a learning disability or a learning problem or a physical impediment of some kind that's certainly going to put some limitations on how far we can go with the child.

I feel successful when they're finishing assignments and when they are done conscientiously as I might expect someone to be able to do within their capabilities. If I think a child is working to their potential, then I am pleased.

I think because it's something in the students' backgrounds that's right and also because of some attitudes that are put into them.

Teacher factors were identified by 11 of the 24 teachers. Seven of those named teacher factors which enhanced their sense of efficacy, and four identified teacher or personal factors which detracted from their sense of efficacy. Examples of these were as follows:

My own effectiveness is at its best when I mingle with my students at their level.

I think that first of all the teacher really has to like children, you can't overdo that. I believe strongly that there has to be an emotional bonding of sorts between the teacher and the child so that a trusting relationship is set up. Then I think, you know, they're ready to learn.

I feel that when I am enthusiastic, usually the kids will pick it up and I'll set the mood of the class so that what I am doing is fun learning as opposed to have-to learning. If I am not in a good mood, if I am at a low point, the kids probably pick it up and all of a sudden teaching becomes work again and their learning becomes work.

When I feel I've got the freedom to be a human being, then I think that impact is positive.

Four of the teachers identified school factors which enhance their efficacy, and eight identified school factors that detract from their efficacy. Examples of these factors were:

I think it comes from the leadership in the school. If you don't have the principal's respect and staff members who are strong, who are working toward betterment, [then you don't have success].

Announcements on the intercom, noise from outside like a machine working in the school playground, all of this seems to take away from my effectiveness as a teacher.

Simple interruptions into classroom time. I suppose factors such as supplies, school environment, attitudes of administrators help me to feel as if I am doing a job that is worthwhile.

Things that would perhaps be out of my control, like school policies and things that I really haven't got a lot of input into.

Home and community factors were seen to be major enhancers by only two teachers and were seen to be detractors by eight teachers. Examples of these comments were

Well, you know, the television, society, the problems are there—the broken homes, the divorces. Parent support I would say is a major factor. Sometimes there just isn't a home environment that supports that so it is a stumbling block.

A large number of students in the classroom, that made it very difficult. The room was too small for that many students. I think if I had a bigger room and fewer students.... And children from broken homes have problems that I can't appreciate and I think I don't understand my native students well enough. More and more I have trouble with the children that have a bit of a social problem.

The general attitude in society toward learning, where children become disenchanted at grade 4 and then down to grade 3 and 2 and so on and I think this is a reflection of society at large. First of all you can only do so much with the clientele that you have. Their upbringing counts for a heck of a lot in how you achieve in the classroom.

Teachers did not necessarily identify the same enhancing or detracting factors at the end of the year as at the beginning. In both cases, these factors seemed to be very context-dependent. The one exception to this was that most teachers who identified factors within themselves as being the major enhancers of student learning stated this opinion in both interviews.

The Teachers' Personal Style

Teachers were asked to describe their personal philosophic orientation to teaching, to describe the purposes of schooling as they saw them, and to comment on how they approached their roles as teachers. From their responses the teachers were classified in terms of whether a coherent philosophical orientation emerged and whether such an orientation tended toward a particular philosophical position.

Of the four teachers who apparently had no philosophical orientation three were from the low efficacy group. For the remaining 19 teachers who did appear to have some philosophic position, there did not appear to be any correspondence between the degree of cohesion and the particular philosophic tendency expressed. However, of the 13 teachers who put forward a coherent view, eight were from the high efficacy group and five were from the low efficacy group, whereas of the six who did not put forward a recognizably coherent view, three were from the high efficacy group and three were from the low efficacy group. There would appear to be some indication that a coherent philosophic orientation correlates with high efficacy.

There was also some evidence that a pragmatic philosophical orientation related to a high sense of efficacy. Of the six who presented a tendency toward philosophic pragmatism, five were from the high efficacy group, whereas of the six who presented a tendency toward classical idealism only two were from the high efficacy group. It would appear that a "practical" orientation was associated with a sense of being able to accomplish something—to make a difference. Whether this implies that a high sense of efficacy has some relationship to a practical bent and an inclination toward doing what works rather than spending time on the higher cognitive processes is not possible to say on the basis of this initial investigation. However, it may well be a dimension of efficacy worthy of further exploration.

Discussion

Although the number of teachers in the study (24) was small, and assignment changes reduced the numbers even further for analysis involving stu-

dent data, there were some interesting results which in part support the research in the United States, and at the very least suggest the need for further study. Relationships between teachers' sense of efficacy and their scores on reasoning tests were suggestive but not significant. Teachers in the high efficacy group did have higher mean reasoning test scores, but these results were significant only for the teaching efficacy scores, and correlations were not significant. Relationships between students' scores on achievement measures and tests of reasoning skills were replicated. There is also some reason to believe that students' beliefs in their own abilities are related to actual achievement. However, it is not clear whether the students' high efficacy beliefs result *from* high achievement or result *in* high achievement, or whether each reinforces the other.

For grade 3 students, teachers' personal sense of efficacy at the beginning of the year appears to be a significant factor in student achievement. Correlations between personal efficacy and student achievement measures were highly significant, and personal efficacy was the first, and in some cases the only, variable to enter multiple regression analyses. It is difficult to explain why these results would be significant only for grade 3 classes and not for grade 6, although the teachers with whom we discussed these results indicated that they were not surprised by this finding. They suggested that by grade 6 the teachers' "influence," or perceptions of ability to influence students, was declining. This suggestion, of course, requires further investigation. Teachers' sense of efficacy did appear to be related to students' sense of efficacy for both grades. Teachers' scores on the NJTRS were not related to any of the student measures; however, it may be that this instrument does not discriminate sufficiently when used with adults.

A number of factors appear to affect teacher's feelings of efficacy. There is some indication that gender may be one of these, based on the fact that the number of males in the study sample was high relative to the number of males in the initial population because of the large proportion of males in the initial group who had low efficacy scores. Time of year also appears to be a factor. Beginning of year efficacy scores seemed to be more closely related to student measures, but teachers' feelings of efficacy during the year depended a great deal on context. In situations where teachers' sense of efficacy had increased or decreased dramatically, unique contextual situations were easily identified.

It appeared from the written measures that teachers believe more strongly in their personal ability to affect student learning than in the ability of teachers in general to do so. However, in interviews personal efficacy beliefs were tempered, perhaps by modesty. Personal factors—those characteristics within students or within the teachers themselves—were more often cited as enhancing sense of efficacy than as detracting from it. School factors such as noise, interruptions, decision making processes, and leadership were cited twice as often as detractors than they were as enhancers of success. Home and community factors—factors over which teachers believe they have little control—were cited four times as often as negative factors than as positive ones. The within-teacher and within-student factors

seemed to be somewhat less context dependent in that they were cited at both the beginning and at the end of the year.

There is some reason to suspect that higher efficacy teachers tend to have a more coherent and a more pragmatic philosophical orientation toward teaching. Perhaps these teachers have a repertoire of "proven" techniques and skills and they stick with what works; perhaps because of the bureaucratic structure of teaching they have learned effective strategies for coping with what they believe they cannot change.

Concluding Comment

This study has raised more questions than it has answered. There is considerable data which requires further analysis. For example, subscale scores on the OCIW, the CAT, and the NJTRS may reveal patterns of relationships; further analysis of the large amount of rich interview data may reveal patterns of beliefs and behaviors of high and low efficacy teachers. This analysis is currently underway. Identifying direct links between teacher and student scores is unlikely because of the complexity of human and contextual intervening variables, but there is clearly reason for further study of these relationships. The next phase of this research will be an indepth study of the teaching practices and belief systems of a small group of high efficacy teachers.

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Cognitive and Environmental Correlates of Adolescents' Achievement Ambitions: Family-Group Differences

The study examined the proposition that for adolescents from different family types, there are variations in relations among measures of cognitive performance, perceptions of later family environments, and achievement ambitions. Data were collected from 516 Australians who were 11 years old during an initial survey and 16 years old in a follow-up study. The adolescents were classified into four family types, defined conjointly by family social status and by parents' getting-ahead or getting-by orientation. Cognitive performance and perceptions of later parental influences had differential linear and curvilinear associations with achievement ambitions for adolescents from the various family types.

In a previous study in this journal, Marjoribanks (1983) examined relations between social status, family environments, and the cognitive performance of 11-year-old Australian children. The findings suggested that "the type of learning environment created in families is related both to parents' occupational status and to the meanings that persons attach to their work activity" (p. 121). It was proposed that further research is required which examines with greater empirical and theoretical understanding relations between family contexts and measures of school-related outcomes. Worth (1986) has observed, however, that "Suggestions for further research, when offered, are seldom followed up either by the authors or the readers" (p. 175). In this present study data were used from the earlier investigation to examine cognitive and family correlates of adolescents' achievement ambitions.

Achievement ambitions were chosen for analysis because much status-attainment research has shown that they mediate, substantially, the impact of family social status and children's cognitive performance on adolescents' eventual status attainment (Carpenter & Hayden, 1985; Kerckhoff, 1984; Knottnerus, 1987; Shavit & Williams, 1985). Saha (1985) proposes, however, that it is necessary to divide achievement ambitions into aspirations and expectations (also see Looker & Pineo, 1983; Mason, Hausser, Kerckhoff, Poss, & Manton, 1976; Spenner & Featherman, 1978). He suggests that aspirations "reflect an acceptance of the positive values society places on high levels of educational and occupational attainment; [expectations] indicate a recognition of the contextual or structural limitations of

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this attainment" (p. 229). In this study the cognitive and family correlates of the educational and occupational aspirations and expectations of a sample of Australian adolescents were examined. While there are fewer studies of the effects of achievement ambitions on status attainment in Australia than in North America, Saha (1985) notes that "there is evidence suggesting that aspirations and expectations are important factors in the attainment process" of Australian youth (p. 229).

Conceptual Framework

In a review of research related to achievement ambitions, Spenner and Featherman (1978) concluded that researchers have not

> identified the main interactional and contextual wellsprings of ambition either within the family or the school. The most fruitful line of inquiry has addressed the social influence of significant others, but even here the interpretations of how these others mold and foster "ambition" are not firmly established. (p. 409)

Similarly, Saha (1985) observes that "despite empirical evidence of the determinants of these social-psychological variables, well-developed theoretical interpretations of the relationships have been lacking" (p. 228).

The present investigation is generated from symbolic interaction theory. In particular, it is proposed that adolescents' achievement ambitions are related to the perceptions they develop regarding their parents' support for achievement. It is also proposed, however, that the relationships between such perceptions and ambitions vary for adolescents who have experienced differential academic achievement in their earlier schooling. That is, adolescents who perceive similar parental support for achievement may express quite different aspirations and expectations, depending on their academic performance in school.

Moreover, it is proposed that associations between perceptions of parents' support and academic ambitions will vary for adolescents from families of different social status. As Howell and Frese (1981) suggest, in traditional stratification terminology, two students with the same educational plans have different motivation labels attributed to them depending on their social backgrounds. "The one from lower origins would be said to have 'further to go' and thus 'must' be more motivated" (p. 221). It is also suggested by Davies and Kandel (1981) that reliance on perception measures introduces potential distortions into explanations of the formation of adolescents' ambitions. They propose that "parental influence, in the form of parents' educational aspirations for their children, exerts itself directly in affecting the level of the child's own aspirations without the child's apprehension of parents' values" (p. 382).

In the construction of the conceptual framework it seemed appropriate, therefore, to assess family environments by using social-status indicators, parents' assessments of those contexts, and adolescents' perceptions of parents' influences. The eventual family framework for the present investigation was based on Kahl's (1953) seminal study of "common-man" boys in which he examined relations between family social status, boys' ability, and their educational aspirations. Kahl observed that in the lower-middle

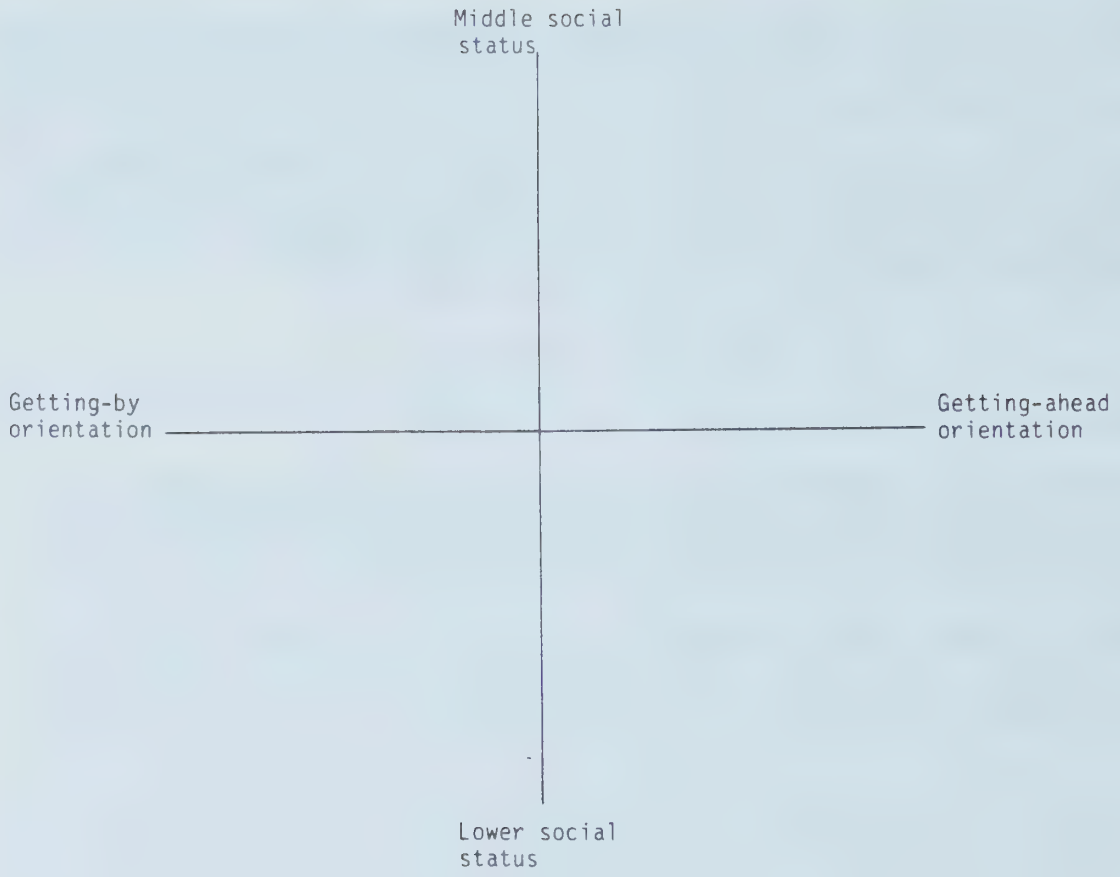

Figure 1: Family learning environment framework

class it was possible to identify "getting-by" and "getting-ahead" families. In getting-by families, boys were encouraged to enjoy themselves while they were young. The boys "were told to stay in high school because a diploma was pretty important in getting jobs nowadays, but they were allowed to pick their own curriculum according to taste" (p. 193). The possibility of pursuing a college education was rarely considered. In contrast, parents who believed in getting ahead started to apply pressure from the beginning of their sons' school careers. "They encouraged high marks, they paid attention to what was happening at school, they stressed that good performance was necessary for occupational success, and they suggested various occupations that would be good for their sons" (p. 201).

For this study the family contexts of 11-year-olds were defined by the dimensions suggested in Kahl's creative analysis. Families were classified by social-status characteristics and by the family dimensions of getting-by or getting-ahead, as shown in Figure 1. These early family types were considered to act as contexts in which children begin to give meaning to and interpretations of their parents' support for achievement. From such interpretations, adolescents develop and stabilize their perceptions of family influences. In each of the family types, relations were examined between the cognitive performance of the adolescents when they were 11 years old, their perceptions of parents' influences now that they were 16 years old, and their present educational and occupational aspirations and expectations.

Method

Sample

Data were collected initially from about 900 11-year-old children and their parents to examine associations between family contexts and children's cognitive performance (Marjoribanks, 1983). The families were selected to reflect the social status and ethnic distribution of Australian families (Marjoribanks, 1980). There were, for example, families from Anglo-Australian, English, Greek, Southern Italian, and Yugoslavian groups. In a follow-up study five years later, resources permitted an investigation involving approximately half of the earlier sample. For this present investigation two parallel pools of families from the original survey were formed. The purpose of the substitute pool was to provide a set of families that could be used if families from the first pool were unable to participate. For the pooling the total number of families was classified into lower and middle social-status groups. Families were then assigned randomly into one of the two pools. In this analysis the sample included 516 families. Each family had a 16-year-old child and the analyses relate to those adolescents. Findings from the investigation need to be interpreted within the limitation that the sample was not random. In the analyses, however, adjustments were made for the design effects of the statistics (Ross, 1987).

Measures

Social Status

During interviews, parents provided descriptions of their occupations and indicated the levels of education they had attained. Occupations were assessed using a 14-point scale that ranks over 300 occupations in the Australian context (Broom, Jones, McDonnel, & Williams, 1982), while 7-point scales were used to rank educational attainment. Principal components analysis revealed that the status indicators loaded strongly on a general factor. Family social status was defined, therefore, by an equally-weighted composite of parents' occupations and education.

Parent Socialization

In the initial survey, Marjoribanks (1983) used Rosen's (1961) social-psychological framework for the analysis of achievement-oriented families. A family environment schedule, in the form of a semistructured parent-interview inventory, was used to assess the interrelated components of parents' achievement training, independence training, achievement-value orientations, and aspirations.

Interviewing was conducted in homes by experienced social-survey interviewers who attended briefing sessions before and during the collection of data. For the present study, when the scores from the family inventory were factor analyzed, a general factor of 24 items was generated that had a theta reliability estimate of 0.86. It was decided, therefore, to use one parent socialization measure. High scores on the measure indicated that families stressed achievement training, encouraged independence, were individualistic, and had high aspirations for their children. Such families were defined

as having a getting-ahead orientation. In contrast, families were labeled as having a getting-by orientation if they expressed relatively low achievement training, encouraged dependence, were collectivistic, and had lower aspirations.

Cognitive Performance

During the original survey, the children's intellectual ability was measured using the Raven's Progressive Matrices. Achievement in mathematics, word knowledge, and word comprehension was assessed by standardized tests devised by the Australian Council for Educational Research. When the scores on the tests were factor analyzed, one general factor was identified that loaded strongly on each of the four tests. It was decided, therefore, to use a single achievement measure that was designated as children's cognitive performance.

Perceptions of Family Environment Schedule

In the follow-up survey, a structured questionnaire consisting of 5-point items was used to gather information about the adolescents' perceptions of their parents' achievement ambitions for them, the encouragement they had received from their parents in relation to secondary schooling, and their parents' general interest in their education. From the responses, two factor scales were constructed that had theta reliability estimates greater than 0.75. The scales were labeled as adolescents' perceptions of father support and mother support for achievement. Items were of the form: How much education do you think your father/mother expects you to receive? How much encouragement has your father/mother given you to stay on at school? and How interested do you feel that your father/mother has been in what you have been doing at high school?

Achievement Ambitions

The educational aspirations and expectations of the 16-year-olds were gauged by asking them to indicate what educational level they would eventually like to achieve and what level they really expected to attain. Seven-point scales were used to construct educational aspiration and expectation scores. The scales ranged, for example, from "I have left school and don't want to return" to "I would like to go on to university."

Also, the adolescents were asked to indicate what job they would really like to have when they were about 25 years old, and what job they really expected to have when they were 25 years old. From the responses, occupational aspiration and expectation scores were generated. Occupations were coded using an occupational-prestige ranking system that was developed at the Australian National University and is known as the ANU-2 Scale (Broom et al., 1982).

Results

For the analysis, adolescents were classified into four family types that were defined by the median split of scores on the social status and initial parent socialization measures (see Figure 1). The family types were labeled as mid-

TABLE 1

Zero-Order Correlations Between Cognitive Performance, Perceptions of Family Environment, and Adolescents' Achievement Ambitions

Cognitive and perception measures	Middle status						Lower status					
	Getting ahead (n = 175)			Getting by (n = 82)			Getting ahead (n = 65)			Getting by (n = 194)		
	A[a]	B	C	A	B	C	A	B	C	A	B	C
Cognitive performance	.28**	.22**	.17*	.45**,[b]	.43**,[b]	.35**,[b]	.14[b]	.12[b]	.03[b]	.33**	.31**	.26**
Perceptions of:												
father support	.52**	.35**	.32**,[b]	.60**	.52**	.57**,[b]	.41**	.40**	.34**	.56**	.44**	.42**
mother support	.62**	.42**,[b]	.39**	.69**	.52**	.52**	.55**	.54**	.53**	.70**	.58**,[b]	.48**

[a]A, educational aspirations; B, occupational aspirations; C, occupational expectations.

[b] Group differences in corresponding correlations significant at 0.05 level of probability.

* $p < .05$. ** $p < .01$.

dle status/getting-ahead (175 families), middle/getting-by (82), lower/getting-ahead (65), and lower status/getting-by (194 families). Because of the relatively small sample size in each category for undertaking multivariate investigation, the analyses were not conducted separately for females and males, which is a restriction of the study. In the total sample, however, there were no significant gender-group differences in the relations between cognitive performance, perceptions of parents' support, and ambitions. Also, when the relationships among the variables were examined, the findings for aspirations and expectations were similar. In the following tables the results for occupational aspirations and expectations reflect that similarity. For the sake of parsimony, however, it was decided to not present the findings for educational expectations.

In Table 1 the zero-order correlations show that within family groups, cognitive performance had negligible to moderate associations with adolescents' aspirations and expectations. Perceptions of father and mother support had moderate to strong associations with the ambition scores. The results indicate that the relations between cognitive performance and ambitions were significantly higher in the middle status/getting-by group than for adolescents in lower status/getting-ahead families. It it not clear, however, why there should be no significant relationships between cognitive performance and the ambitions of adolescents in the lower status/getting-ahead families. In part, it may reflect that there was a conflict between lower social status and getting-ahead orientations that provided a contextual barrier to the development of such associations. Occupational expectations were more strongly related to perceived father support in the middle status/getting-by group than in the middle status/getting-ahead families. Also, perceived mother support had significantly stronger associations with occupational aspirations for adolescents in lower status/getting-by families than for those in the middle status/getting-ahead group. These initial results indicated the possible presence of family-group differences in relations among cognitive performance, adolescents' perceptions of parental influence, and their achievement ambitions.

Zero-order correlations provide, however, only a limited understanding of the covariate structure of variables. Relationships among cognitive performance, environment perceptions and ambitions were investigated further by plotting regression surfaces generated from hierarchical regression models. In the models, product terms were included to test for possible interaction effects, and squared terms were added to examine possible curvilinear relationships. Prior investigations have indicated the presence of interaction and curvilinear relations among measures of adolescents' individual attributes, environment measures, and their school-related outcomes. That is, the regression models were of the form: $Z=aX+bY+cX.Y+dX^2+eY^2+\text{constant}$, where Z, X, and Y represented measures of ambitions, cognitive performance, and environment perceptions respectively. In order to reduce multicollinearity in the regression models, each variable was transformed by subtracting means from the raw scores of the relevant measures.

TABLE 2

Raw Regression Weights for the Multiple Regression of Cognitive Performance and Perceptions of Parents' Support on Achievement Ambitions

Cognitive and perception measures	Middle status						Lower status					
	Getting ahead			Getting by			Getting ahead			Getting by		
	A[a]	B	C	A	B	C	A	B	C	A	B	C
Performance	.009*	.509*	.360	.016	1.06*	.741	.002	.144	-.194	.009c	.781[c]	.883
Father support	.244	10.3	10.1	.288	15.6	21.1	.231	15.6	17.4	.261	15.3	16.9
Performance x Father support	b	b	b	-.003*	b	b	b	b	b	b	b	.181*
(Performance)^2	b	b	b	.0003*	b	b	b	b	b	b	b	b
(Father support)^2	.028*	1.12*	1.61*	.038*	1.99*	1.77*	.035*	1.72*	2.52*	.028*	2.16*	1.24*
R[c]	.61	.41	.40	.78	.66	.64	.60	.50	.48	.68	.59	.52
Performance	.008*	.450	.301	.016	1.16*	.800	.003	.150	-.185	.009*	.747*	.655*
Mother support	.347*	14.7*	15.5*	.303	17.8*	22.2*	.226	16.8	20.6	.344	20.2	17.2
Performance x Mother support	b	b	b	b	b	b	b	b	b	b	b	b
(Performance)^2	b	b	b	.0003*	b	b	b	b	b	b	b	b
(Mother support)^2	b	b	b	.038*	b	b	.030*	1.66*	1.98*	.014*	1.58*	1.88*
R[c]	.63	.43	.40	.74	.57	.54	.63	.58	.57	.72	.62	.53

[a] A, educational aspirations; B, occupational aspirations; C, occupational expectations.
[b] Variable not included in the second stage of the hierarchical regression analysis.
[c] All multiple correlations significant beyond 0.05 level of probability.
* Value of raw regression weight exceeds at least twice its standard error.

In the analysis, if the addition of interaction or squared terms was not associated with a significant increment in the amount of variance in ambition scores, then the term was deleted from the particular regression model. When interaction and curvilinear terms make a significant contribution to the variation in dependent measures, it is necessary to interpret with caution the regression weights in the resulting full regression model. Once such higher-order terms are added to a regression model, the coefficients of linear forms of the related variables become unstable. In the following table, if interaction or curvilinear terms were significant, then only the regression weights associated with those variables have been designated as being statistically significant. The implication is that the related linear term was significant before the addition of the higher-order term, and its continued significance is reflected in the addition of the associated later term.

Generally, the findings in Table 2 indicate that in each family type, the predictor variables combined to have moderate to strong associations with achievement ambitions. There were, however, family group differences in the amounts of variance associated with the predictors. Also, the regression weights reveal the possible complexity of relations among the variables in the various groups. In each family type, for example, aspirations and expectations were related to the squared-father support term. Moreover, in lower social status families, achievement ambitions were associated with the squared-mother support measure. In particular, adolescents' educational aspirations in middle status/getting-ahead families had intricate associations with the predictor variables.

From the raw regression weights in Table 2, regression surfaces were plotted to examine further the nature of family-group variations in the relations among the variables. Because of space limitations it was not possible to present all the surfaces. Instead, 16 surfaces that depict the nature of the different associations among the variables have been chosen and presented in two figures. Scores for the figures were standardized with means of 50 and standard deviations of 10, calculated over the total sample.

The surfaces in Figure 2 show the regression-fitted relations among cognitive performance, perceptions of parents' influences, and educational aspirations in each family type. For middle status/getting-ahead and lower status/getting-by families, adolescents' cognitive performance had significant linear associations with educational aspirations at each level of parents' support. In contrast, cognitive performance and educational aspirations were not related in lower status/getting-ahead families while they had curvilinear associations in middle status/getting-by families.

For adolescents in middle status/getting-ahead families, perceived mother support had significant linear relations to educational aspirations. At each cognitive level, increases across the range of mother-support scores were associated with increments of approximately 25 regression-fitted points in aspirations. Perceived father support, however, tended to act as a threshold variable such that until a certain support level was perceived, there was no association with aspiration scores. After the threshold value, further increments in father support were related to increasing changes in

aspirations. At a performance score of 30, for example, the fitted-educational aspiration scores were 42, 42, and 51 at father-support values of 40, 50, and 60 respectively. In lower status/getting-ahead families, father and mother support also tended to act as threshold variables.

The shapes of the surfaces in the middle status/getting-by group express the possible complexity of relationships among the variables being investigated. Cognitive and environment measures had curvilinear associations with aspirations. The shape of the father-support surface reflects a significant interaction between the predictors and the aspiration scores. At father-support values of 30 and 70, for example, adolescents' educational aspirations increased by approximately 12 and 4 regression-fitted points across the cognitive scores. For lower status/getting-by families, father support acted as a threshold variable, while perceived mother support had a positively increasing curvilinear relation to educational aspirations.

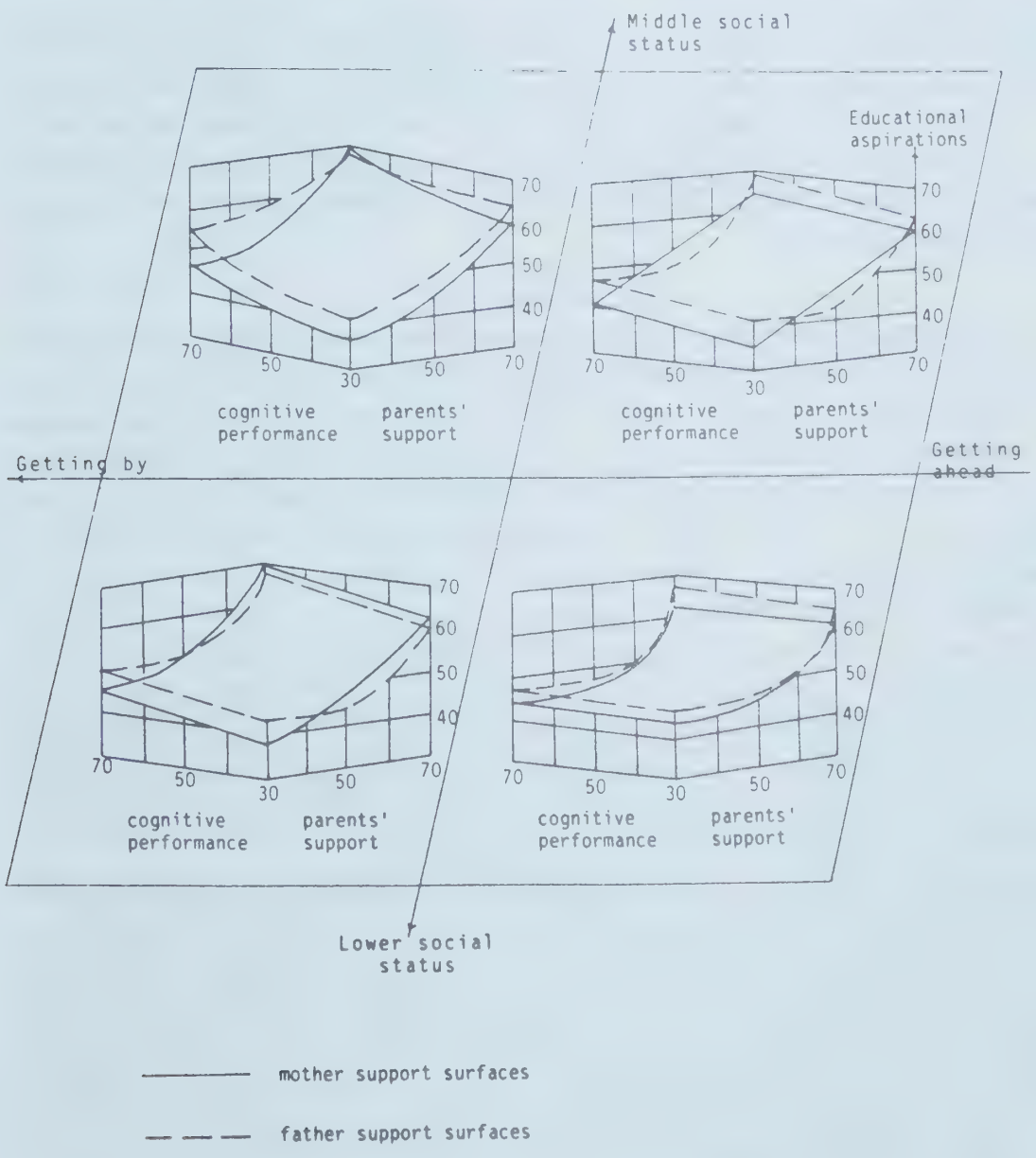

Figure 2: Fitted-educational aspiration scores in relation to cognitive prformance and perceived parents' support in each family group

In Figure 3 the surfaces show the regression-fitted relations among cognitive performance, parents' support, and adolescents' occupational expectations in each family type. The patterns of relationships for occupational aspirations and expectations were rather similar. There was, however, a significant interaction effect involving expectation scores. It was decided, therefore, to plot the surfaces for expectations to portray the effect of such an interaction. Only in lower status/getting-by families was cognitive performance related to occupational expectations. For adolescents in those families, increments across the range of cognitive performance were related to approximately 6 fitted-points in expectations at each level of perceived mother support. In contrast, the father-support surface exhibits the presence of a significant interaction effect. At low father-support values, occupational expectations were not related to cognitive performance; however, they had a significant positive association at high levels of perceived father support.

Also, the surfaces indicate that in the middle-status groups perceived mother support had significant linear relations to occupational expectations, whereas in the lower-status groups mother support acted as a threshold variable. In each family group, the surfaces portray the presence of curvilinear relationships between perceived father support and occupational expectation scores.

Discussion

The findings from the study suggest that if children's family learning environments are defined conjointly by social status and socialization dimensions, then cognitive performance and perceptions of later family influences have differential associations with achievement ambitions for adolescents from the various family groups. That is, early family-environment type may be considered to act as a critical underlying variable for the formation of adolescents' perceptions of their parents' support for achievement and of their eventual achievement ambitions.

In educational investigations there is an increasing tendency to adopt interaction research models. Such orientations suggest that school-related outcomes are associated with individual attributes and with learning situations. Much of the research, however, has been restricted to an examination of how much variation in outcomes is related to attributes, situations, and the interactions between attributes and situations.

By building on Kahl's (1953) analysis the present study indicates that interaction models might profitably be examined within previously experienced learning contexts. That is, the study suggests the general proposition that adolescents' early family experiences provide differential contexts in which individual attributes interact with later environment perceptions to impact on eventual school outcomes. The study also suggests that in status-attainment research, further refinements of family environments are required which accept that social-status groups are not homogeneous in relation to the experiences provided for children (Aggleton & Whitty, 1985; Brewer & Haslum, 1986; Snipp, 1985). Be defining family

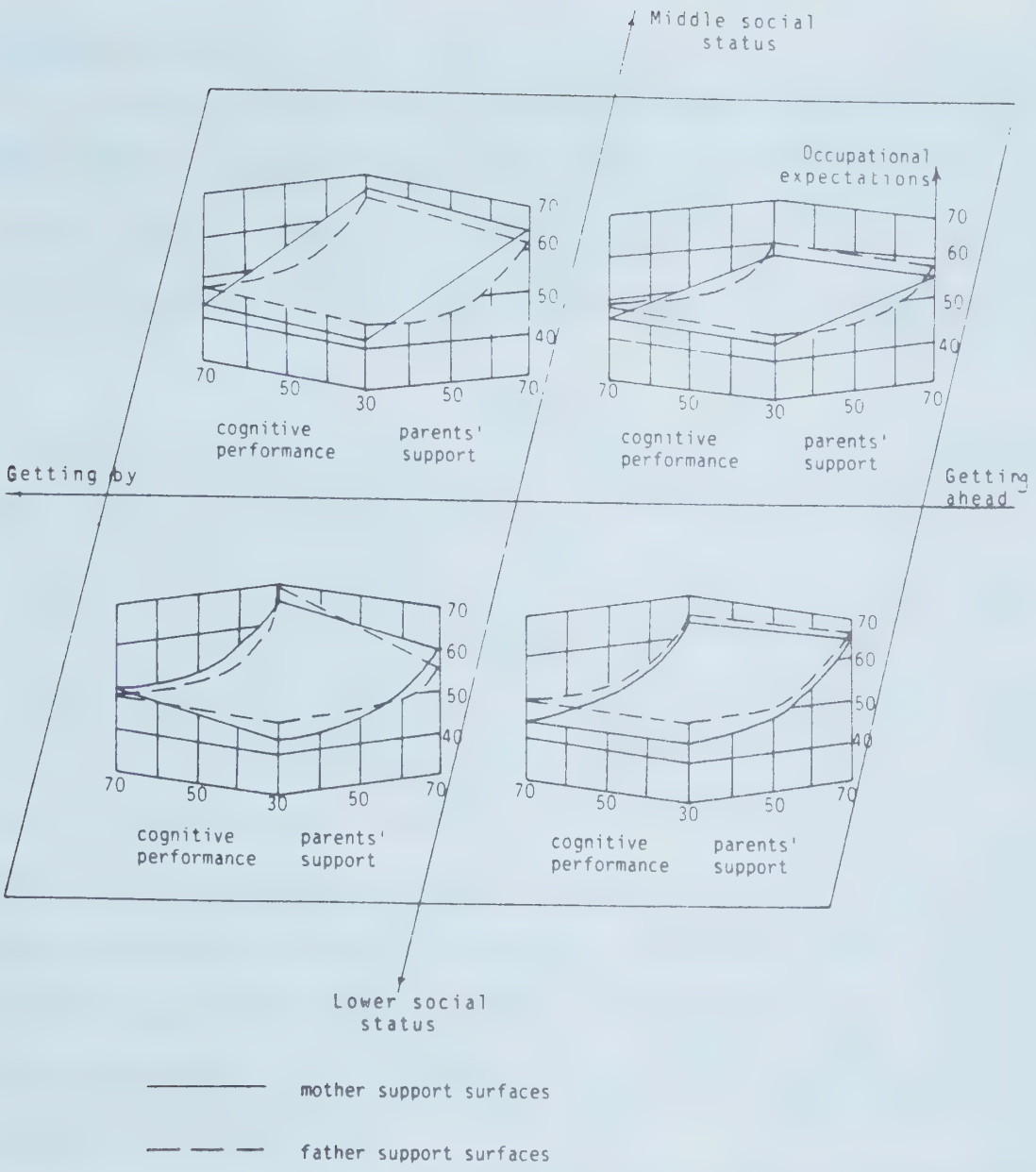

Figure 3: Fitted-occupational expectation scores in relation to cognitive performance and perceived parents' support in each family group

environments conjointly by social status and socialization dimensions, the analysis provides support for the contention of Jeffries and Ransford (1980) and Ransford and Miller (1983) that more accurate predictions and a more complete theoretical understanding of social-psychological relationships might occur if the intersections of social hierarchies are examined.

The previous study by Marjoribanks (1983) suggested the need for further analyses of relations between family learning environments and adolescents' school-related outcomes. By replicating, in part, Kahl's investigation and by using regression surface models, the present study indicates the possible complexity of relations between family situations and achievement ambitions at different levels of cognitive performance. The findings suggest that children's early family types provide a context from which adolescents form perceptions of their parents' support for achievement. Such perceptions are related differentially to the adolescents' achievement ambitions at various levels of cognitive performance. What is required now

are studies that examine associations among other measures of individual attributes, environments, and outcomes for adolescents from various family groups. In such research it would be desirable to assess with increasing sensitivity the getting-by/getting-ahead dimension of family socialization. When such research is undertaken it will be possible to conclude to what extent early family type is an organizing force that guides relations between individual attributes, environment perceptions, and adolescents' school-related outcomes.

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PERSPECTIVES

Play and Cognitive Development in Preschoolers: A Critical Review

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Results regarding the role of play in cognitive development are inconclusive, and an oft cited reason is the problem of defining play. Examination of "play-and-cognitive-development" research reveals that in general, play is defined in a consistent manner, but on the other hand, inconsistent formulations of cognitive development are applied. This article suggests that the approach to definition of cognitive development must also be considered when attempts are made to draw conclusions about play's consequences for cognitive development.

During the last 15 years, the role of play in the development of the child has been the subject of great interest and controversy among educators and psychologists. A vast literature has accumulated addressing this subject, including books, empirical studies, newsletters, and conference reports. Play has been seen as developmentally irrelevant by some educators such as Montessori (1967), as the child's major way of learning from earliest infancy (Weininger, 1979), and even as the foundation on which human culture rests (Huizinga, 1970).

Nowhere have differences about the function and consequences of play in children's lives been more sharply defined than in the study of its relationship with cognitive development. A quotation from Saltz and Brodie (1982) illustrates these differences:

> Does "pretend play" influence cognitive development in young children? The very question seems to arouse strong emotions in many. On the one hand, there are those for whom the notion of play seems to have an almost mystic significance for development.... To others the notion is treated like an attempt to invoke supernatural causation. (p. 97)

The central issue has been, and continues to be, whether or not play is constitutive of cognitive growth.

In attempting to determine what consequence play has for the cognitive development of preschoolers, one must ascertain first whether various re-

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searchers define *play* and *cognitive development* in a consistent fashion. This review finds that variations in the definition of play have been noted and discussed; some have even questioned the need for a definition at all (Schwartzman, 1978). In this way definitions of play are made explicit, and in our view play has been defined in a reasonably consistent manner throughout the literature. In contrast the various formulations of cognitive development that inform the play research have not been noted. Conclusive results regarding the role of play in cognitive development have proven elusive, and an oft cited reason is the problem of defining play. Differences in a definition of cognitive development, however, might also explain some of the discrepancies. The suggestion we are advancing is that the approach to definition of cognitive development must also be considered when attempts are made to draw conclusions about play's consequences for cognitive development.

Definitions of Play

With respect to play, Smith and Vollstedt (1985) proposed the following: "The problem of defining play cannot be evaded indefinitely ... if certain researchers show that play is important in development or education, then practitioners would need to know on what basis play had been or should be distinguished from other behaviours" (p. 1042). For example, Smith and his colleagues suggested that by some criteria *constructive play*, in which objects seem to be manipulated by the player with a goal in view, would appear more like work than play (Smith, Takhvar, Gore, & Vollstedt, 1985). Hence claims by researchers who relate constructive play to cognitive development might be irrelevant to Smith and others. How significant is the problem of the definition of play?

A plea for a clear and concise definition of play has surfaced repeatedly in the literature, and indeed Vandenberg (1982) called play a concept in need of a definition. Berlyne (1969) remarked that

> a characterization of playful behaviour is not easy ... certain themes continually reappear, and one writer after another tries desperately to pin them down. There is, however, obvious disagreement about what ought to be regarded as the salient defining characteristics of play. (p. 814)

The Defining Characteristics of Play

Some researchers attempt to define play by means of a consensus on its salient psychological features (Rubin, Fein, & Vandenberg, 1983). Play is described as intrinsically motivated and as attention to means rather than ends. The goals of play behavior are self-imposed rather than imposed by others. Play is not a serious rendition of the activities it resembles, and it is characterized by nonliterality. Play is free from externally imposed rules, and it requires the participant to be actively engaged. Krasnor and Pepler (1980) add that play is flexible and accompanied by positive affect. In sum, play is voluntaristic, spontaneous, pleasurable, and open-ended. While this type of definition of play is desirable, until recently (Smith & Vollstedt, 1985) no empirical research had been conducted to determine whether observers actually use these criteria to identify play.

Play as a Taxonomy

Taxonomies of play, on the other hand, which define play according to observable categories of behavior, have proven useful for research (Chance, 1979). Writers such as Piaget (1962), Smilansky (1968), who elaborated on Piaget's categories, and Parten (1932) described play categories based on social and cognitive functioning. Within Smilansky's cognitive scheme, for example, play was divided into four general types which follow a developmentally ordered pattern of change: functional play—simple repetitive muscle movements with or without objects; constructive play—the manipulation of objects to construct or to create something; dramatic play—the substitution of an imaginary situation to satisfy the child's personal wishes and needs; and games with rules—the acceptance of prearranged rules and the adjustment to these rules. Smilansky suggests that functional play appears first in infancy, and games with rules appear last at about seven years. Symbolic play occurs at about one year, reaches a peak at four or five, and tapers off at six years of age (Fein, 1981).

Research about the categorization of play has focused on the proposed developmental sequence. In one study using Smilansky's categories, Rubin and Maioni (1975) examined the relationship between play preference during free play in nursery school and two cognitive measures, decentration and classification skills. They found that sampled children engaged in significantly more functional, constructive, unoccupied, and dramatic play than in games with rules, and in significantly more functional and constructive play than dramatic play. In addition, they found significant negative correlations between functional play and the cognitive measures, and significant positive correlations between dramatic play and the cognitive measures.

In a second study, Rubin, Watson, and Jambor (1978) utilized a comprehensive observational format that nested the cognitive play categories of Smilansky (1968) within the social play categories of Parten (1932) to compare the free play behaviors of both preschool and kindergarten children with an age range of 49 to 69 months. Parten's six sequential social play categories are (a) unoccupied behavior—watching anything of passing interest, walking around the room, play with the body; (b) solitary play—alone with materials different from children within speaking distance, no conversation with others; (c) onlooker behavior—watching others, perhaps talking to others but with no entry into the play situation; (d) parallel play—playing independently with toys similar to those being used by others in close proximity, no attempt to play with others; (e) associative play—playing with other children, no role assignment or organization of activity; and (f) cooperative play—playing in an organized group. Rubin and associates found that preschoolers engaged in significantly more solitary-functional and parallel-functional play and in less parallel-constructive, parallel-dramatic, and group-dramatic (associative and cooperative) play than their kindergarten counterparts. These findings were replicated by Rubin and Krasnor (1980) with longitudinal data.

Others have questioned the proposed developmental sequence. For example, Moore, Evertson, and Brophy (1974) were among the first to consider that solitary play in children, which had been treated as evidence of nonsociability, immaturity, and dependency, was in fact indicative of independence and maturity. The authors found that the solitary play of 116 kindergarten children observed during free play was in general goal-directed, educational, and/or physically challenging. The results of another study, in which Smith (1978) observed the social participation of 48 preschool children over nine months, showed that solitary behavior did not decrease noticeably with age through the preschool period.

Despite controversy regarding the developmental sequence of play categories, this literature also demonstrates high levels of interexperiment reliability for recognizing playful behavior. Further, using the play categories described above, researchers are able to delineate their particular area of interest, and appear to understand one another's research across the accumulating play literature, thereby suggesting intraexperiment reliability as well. The literature clearly mirrors a statement made by Klinger (1969): "Nearly everyone feels he understands what is meant by 'play' and investigators are even able substantially to agree in identifying particular instances" (p. 277). Table 1 summarizes the approach to definition and the interexperiment reliability of some of the studies that have attempted to define and categorize play.

On balance, it appears that the phenomenon of play has been defined in a reasonably consistent manner using fairly standard criteria. Across studies, the same categories and psychological features have been used to study play, and within studies, these categories have been recognized with a high degree of reliability. Investigators seem to mean somewhat the same things when they use the term play.

Formulations of Cognitive Development

The second part of the question raised at the beginning of the article is whether researchers on play have consistent viewpoints when they refer to cognitive development? Paraphrasing Smith and Vollstedt's (1985) comments on play, if certain researchers show that play is important for cognitive development, then practitioners need to know how cognitive development has been defined.

Cairns' (1983) review of the history of the science of behavioral development reveals a diversity of theoretical and methodological approaches stretching back over the last 100 years. The study of cognitive development mirrors that diversity, and Case's (1984) comments on its major traditions are illuminating. According to Case, there have been three major traditions in the study of intellectual development: the empiricist tradition, the rationalist tradition, and the historico-cultural tradition.

The empiricist tradition. From the perspective of the empiricist tradition, whose roots lay in the writings of Locke (1632-1704) and Hume (1711-1776), knowledge acquisition is a process in which the perceptual system first detects stimuli in the external world, and the cognitive system then detects patterns in these stimuli. Developmental psychologists within this

TABLE 1
Interexperiment Reliability for Definitions of Play

Approach to Definition	Reference	Interexperiment Reliability
By Extension		
Paradigm	Matthews and Matthews, 1982	89%
Category	Barnes, 1971	92%
	Moore, Evertson, and Brophy, 1974	almost 100%
	Rubin and Maioni, 1975	95%
	Rubin, Maioni, and Hornung, 1976	95%
	Rubin, Watson, and Jambor, 1978	90% and 92.5%
	Rubin and Krasnor, 1980	82.5%
	Smith, 1978	87.4%
By Intension		
Salient Features	Smith and Vollstedt, 1985	80%

Note: Definition by extension: process of definition by naming examples
Definition by intension: process of definition by identification of salient features

tradition have tended to view intellectual development as the child's increasing ability to discriminate or encode various classes of stimuli and induce associations among them. Gagne's (1968) comments summarize this approach. Intellectual development is viewed as

> the building of increasingly complex and interacting structures of learned capabilities. The entities which are learned build upon each other in a cumulative fashion and transfer of learning occurs among them. The structures of capability so developed can interact with each other in patterns of great complexity and thus generate an ever increasing intellectual competence ... this constitutes a genuine and measurable aspect of the learner's intellectual capability ... the stage of intellectual development depends upon what the learner knows already and how much he has yet to learn in order to achieve some particular goal. Stages of development are not related to age except in the sense that learning takes time. (pp. 189-190)

These basic notions have spawned a wide range of theories including behaviorist and neo-behaviorist theories and more recently information processing theories. While these theories differ in many respects, they are united in their views about the scientific process. They share the assumption that information provided by our senses serves as the basic building block of all our knowledge (Angeles, 1981) and that learning and development are essentially equivalent (Case, 1984).

The rationalist tradition. The second tradition in the study of intellectual development is the rationalist tradition, whose roots are found in the writings of Kant (1724-1804). Rationalism is the philosophic approach which emphasizes reason as the primary source of knowledge, prior or superior to and independent of sense perception. Reality is knowable independently of observation, experience, and the use of empirical methods. Rationalism has been contrasted with empiricism (Angeles, 1981). Kant suggested that knowledge is acquired by a process in which order is imposed on the data that the senses provide and is not merely a quality detected in these data. Within this tradition, intellectual development is viewed as age-related changes in the structures or order-imposing devices which human beings are equipped with from birth. Piaget's theory of cognitive development is the foremost example of this tradition (Case, 1984).

As a rationalist, Piaget saw intellectual development in terms of shifts in strategies resulting from a more general shift in children's logico-mathematical structures. These stage changes are reflected in the child's ability to perform certain tasks. Stage changes reflect qualitatively distinct types of logical structures, and the sequence of development is assumed to be invariant and universal. Because knowledge is constructed reflexively rather than empirically, development is necessarily slow. Because it was assumed to be universal, the role of experience, particularly physical experience, was minimized as a promoter of cognitive development (Case, 1985).

The historico-cultural tradition. According to Case (1984), the third tradition in the study of intellectual development is the historico-cultural tradition, whose roots may be traced to the writings of Goethe, Hegel, and Marx. Within this view, knowledge is always acquired in a social context as a function of the unique historical circumstances in which the group finds itself. Intellectual development cannot be separated from cultural and social experience, from the social and physical environment, from the tools which have been developed for coping with environments, and from the ways in which these tools are passed on from one generation to the next. The theories of Vygotsky and Bruner are the best known examples in this tradition (Case, 1984). Bruner, for example, stressed the importance of understanding the structure of the social context in which the transmission of knowledge takes place in order to understand the nature of the mental structures that result (Case, 1985). Bruner (1965) stated that growth of the mind is always growth assisted from the outside.

From this brief review of the major traditions in the study of intellectual development, it is obvious that there have been a wide range of approaches in examining this phenomenon. While there might be some similarities among the three traditions about what constitutes knowledge and what contributes to the growth of knowledge, there are also distinct and fundamental differences. Earlier we suggested that, in general, play researchers have explicated their definitions and categorizations of play. Consideration of the relationship of play to cognitive development, however, does not appear to have taken differences in formulations of cognitive development into account. Implicit theoretical assumptions about what is

meant by cognitive development inevitably determine the conclusions that researchers may draw about its relationship to play.

Play and Cognitive Development—The Rationalist Perspective

Piaget evolved a theory of play based on his theory of cognitive development. As such, his theory of play reflected his basic beliefs about the nature of intellectual processes and the characteristics of children's thought at particular ages. His theory of play has been widely accepted as the definitive and most comprehensive explanation in developmental psychology (Fink, 1976).

Piaget thought that play was a characteristic feature of early childhood that disappears with the onset of rational thought. Within his formulation, mastery play is equivalent to sensori-motor practice and characterizes the sensori-motor period. Symbolic play emerges in the second year at the end of the sensori-motor period, reaches a peak at age four, and declines after age six. Beginning with the onset of concrete operations, games with rules predominate (Piaget, 1976a, 1976b). As the principal mode of play in the preschool years, as well as one that has been particularly studied for its cognitive consequences (Sachs, Goldman, & Chaille, 1984), symbolic play is the focus of this section.

Piaget explained intellectual adaptations in terms of two central processes: assimilation, in which children incorporate environmental events, objects, and situations into existing ways of thinking; and accommodation, the modification of existing intellectual structures or schemas to adjust to new assimilations (Sigel, 1964). In symbolic play, during this period the child appears to mold reality to his or her own caprices without rules or limitations. Unlike objective thought which seeks to adapt itself to the requirements of external reality, symbolic play was seen as egocentric thought in its pure state. As such, Piaget described play as essentially assimilation, or as the primacy of assimilation over accommodation (1962). Play could not be regarded as causative of cognitive growth, but rather as a reflection of young children's conceptual immaturity and their tendency toward egocentricity (Piaget, 1962, 1976b). Piaget limited the function of play to practice or consolidation of newly developed cognitive abilities, thereby solidly entrenching them and preventing their loss through disuse (Fink, 1976; Rubin, Fein, & Vandenberg, 1983).

Play research undertaken within a Piagetian framework has been characterized by its attention to a specific range of cognitive variables, such as the attainment of the concept of conservation or perspective taking skills. These variables, which are landmarks in Piaget's theory of cognitive development, indicate the emergence of more complex cognitive structures. Rubin, Fein, and Vandenberg (1983) and Smith and Syddall (1978) list a number of studies in which there were no or nonsignificant results for these measures subsequent to experimental intervention that involved play. Given Piaget's belief in the slow acquisition of logical structures in a progression of invariant stages, such results are expected. It is interesting,

however, to review more thoroughly those studies in which there were positive results.

A number of researchers working within the Piagetian framework have suggested that Piaget misread the cognitive significance of symbolic play. One set of objections arose out of these researchers' observations of the conceptual maturity with which preschool children appeared to operate in this medium.

In a unique study, Golomb (1977) reacted to Piaget's assertion that in symbolic play, the child "distorts objects and uses them at will" (p. 102). In her research with children aged 2.8 to 5.8 years, Golomb found orderly rule-governed substitutions in puzzles and pretence games, a function of the nature of the task and the characteristics of the play objects. Substitutions proceeded from optimal choices to neutral ones; the general trend was to reject incongruous items. Indeed, when only incongruous objects were available for substitutions, children's responses ranged from hesitation, evasiveness, or outright rejection to amusement or laughter.

Object substitution is one area in which playing children illustrate disciplined thought; role-playing is another. Concepts commonly associated with Piaget's concrete operational stage, such as conservation (i.e., the realization that certain properties remain invariant despite perceptual transformations) and perspective-taking seem fundamental to the sociodramatic play activities of preschoolers (Fink, 1976; Sutton-Smith, 1967). Golomb and Cornelius (1977) suggest that the child's ability to substitute objects and establish roles while simultaneously maintaining the original function of the objects and the identity of the participants illustrates a thought process analogous to conservation. In addition, the ability in role-play to view oneself and the world from another's perspective reflects what Piaget considered was a conceptually mature ability to shift or decenter from one aspect of a situation to another in a flexible, balanced manner (Feffer & Gourevitch, 1960).

Other objections to Piaget's characterization of play stem from his assertion that play is primarily assimilation. In fact, children at play appear to encounter and react to activities that could conceivably demand accommodation. Feffer and Gourevitch (1960) describe how in role-play, children must accommodate to the implications engendered by each new perspective. Rubin and Pepler (1980), Matthews (1977), and Fink (1976) suggest that conflict and resolution, which are so much a part of socio-dramatic play, provide opportunities for accommodation.

The play training paradigm, pioneered by Smilansky (1968), is one experimental approach that has been extensively used in attempts to determine the significance of symbolic play for cognitive development. Because researchers noticed conceptually mature and innovative behaviors in symbolic play, they predicted that participation in such play reduces children's overall levels of egocentrism and improves their performance at tasks measuring cognitive abilities (Brainerd, 1982). And given data that some groups of children such as "disadvantaged" children or "culturally different" children are less likely than others to spontaneously produce

pretend behavior (Feitelson, 1977; Feitelson & Ross, 1973; Smilansky, 1968), researchers attempted to establish a causal relationship between pretend play and certain cognitive variables by training nonpretending children in fantasy play and then assessing changes in other areas of functioning.

A number of studies have used Smilansky's approach with interesting results. Golomb and Cornelius (1977), for example, explored the relation between symbolic play training and conservation attainment. The results of their study showed that nonconserving preschoolers who had undergone symbolic play training made a distinct improvement in conservation performance; their achievement was not matched by the control subjects. Fink (1976) also used the play training paradigm. He concluded that imaginative play had a facilitative impact on two aspects of cognitive development: social role conservation and the diminution of egocentrism as measured by kinship problems.

Despite contradictory findings with regard to the role of play in cognitive development, this body of research has in common a particular approach to what is meant by cognitive development. This approach expresses itself in the variables by which cognitive development is measured as well as in discussion of the processes by which cognitive development is thought to occur. Given Piagetian assumptions about the reflexive nature of knowledge construction, we find that the tone of the research is generally negative within this framework for the constitutive role of play in cognitive development.

Play and Cognitive Development—The Historico-Cultural Perspective

The theories of Bruner and Vygotsky have been classified within the historico-cultural tradition of cognitive development. Both have written about the adaptive function of play and have given play a major role in determining developmental outcomes (Bruner, 1974, 1976a, 1976b; Vygotsky, 1967). Vygotsky called play the "leading source of development in the pre-school years ... a means of developing abstract thought" (p. 6). Bruner (1974) stated that play was the "principal business of childhood" (p. 128).

Bruner's image of the child as the inheritor of cultural tools is helpful for understanding the importance of play for cognitive development within a historico-cultural context. In any culture, tools are passed on through the efforts and assistance of the culture (Bruner, 1965) and through the individual's biological predisposition to attend to those efforts (Case, 1985). Our culture has evolved cognitive tools, including problem solving strategies and various representational systems, which culminate in abstract thought. If play facilitates the transfer of such tools from one member of the culture to another, then it may be said to contribute directly to cognitive development.

Bruner (1974) implicated play in the acquisition of problem solving skills: "play has the effect ... of making possible the playful practice of subroutines of behaviour later to be combined in more useful problem solving" (p. 127). Borrowing from the primate literature and from Bruner, Sylva (1977) speculated on the processes that might be involved. First, playful

manipulations of seemingly useless novel objects lead to a store of information about those objects and their potential use in the environment; this information can be called on when needed. Second, because it occurs in the absence of life pressures, play provides the player with an opportunity for combinatorial flexibility with objects and event sequences such that new rules for thought and action can be learned. Finally, play requires that the player abstract herself or himself from the immediate surroundings. Abstraction and the assemblage of constituent acts in play are important features of the problem solving process. What is acquired through play is a general set toward solving problems with increased potential for innovation.

The research that naturally grew out of the preceding assumptions focused on the role of play in the development of problem solving skills. Pepler and Ross (1981) considered play to have an effect on two categories of problem solving: convergent and divergent problem solving skills. Convergent problem solving was defined as that required by problems having one and only one correct solution. Divergent problem solving involves solving a problem or task that has no single correct solution but a variety of possible solutions. Divergent problem solving has also been referred to as divergent thinking, creativity, and associative fluency.

Convergent problem solving. In a seminal study, Sylva, Bruner, and Genova (1976) provided evidence for the role of play in promoting convergent problem solving skills. Preschool children seated in chairs were asked to reach a distant lure without standing up. To solve this problem, children had to clamp two sticks together with a "c" clamp. Prior to being presented with the problem, children were assigned to one of three conditions: a play condition, a training condition, and a control condition. The results of Sylva, Bruner, and Genova showed that play and training groups were equally proficient in subsequent problem solving and approached the problem in an orderly manner, in contrast to the control group. The play group, however, made more effective use of experimenter hints and exhibited more persistent goal-directed behavior.

Using a slightly modified version of the tasks of Sylva, Bruner, and Genova (1976), Smith and Dutton (1979) investigated the relative importance of play opportunities and training experience for problem solving in 4-year-olds. Results showed that play and training both helped children solve standard problems. With an innovative task, however, children in the play condition emerged as superior; with few or no hints, they solved the problem more quickly.

Divergent problem solving. One of the first studies to investigate the effects of play on creativity was conducted by Dansky and Silverman (1973). They thought that increased opportunity to engage in playful activity would facilitate the ability to form relationships and associations among objects, actions, and ideas which were typically unrelated, thus facilitating associative fluency. Their findings supported this hypothesis. On the Alternative Uses Test, subjects in the play group named significantly more nonstandard uses for each of four specific objects and made more use of available environmental cues than imitation or control subjects. There was no sig-

nificant difference in the number of standard uses given by the three groups. Dansky and Silverman (1975) extended these findings and showed that children in the play condition produced significantly more standard and nonstandard uses than imitation or control subjects, even when the test objects were not available during play. Like Sutton-Smith (1967), they suggested that the opportunity to play promoted a mental set for generating associations.

Finally, in 1980 Dansky found that the effects of play on associative fluency were restricted to those children who normally engaged in make-believe play during free play in their classrooms and who, during the experimental condition, made nonliteral use of objects. Further support for the relationship between pretend play and creativity or divergent thinking comes from the work of Feitelson and Ross (1973) and Pepler (1982). Pepler, for example, noted that representation during play, which she defined as a shift in attention from the concrete nature of the play pieces to their more abstract meaning, contributed to divergent thinking.

Play research undertaken within a historico-cultural framework is characterized by its attention to specific variables of cognitive development, namely problem solving skills and creative thinking. Variables of cognitive development which characterize research undertaken within a Piagetian framework such as conservation and perspective taking tasks are notably absent. Given historico-cultural assumptions about the positive role of social factors for development, the tone of the play research within this framework is generally more optimistic for the constitutive role of play in cognitive development.

Play and Cognitive Development—The Empiricist Tradition

Case (1984) ascribed behaviorist, neo-behaviorist, and information processing views of cognitive development to the empiricist tradition. According to Rubin, Fein, and Vandenberg (1983) and Weisler and McCall (1976), the study of play has proven problematic and unproductive within this framework.

A number of reasons for this state of affairs may be suggested. Berlyne's (1969) review of play showed how early behaviorist writers viewed play as a "purposeless" activity not worthy of scientific inquiry. Within the information processing view, a developmental perspective has only recently been applied. According to Siegler (1983), the mechanisms by which cognitive development occur have not been identified, and this lack has hindered theoretical progress in this area.

In this literature on play's contributions to cognitive development, was there any research which might be classed within this tradition? We speculate that the Saltz, Dixon, and Johnson study (1977) and the Saltz and Brodie review (1982), with their attention to a wide range of cognitive variables, followed the empirical view of knowledge development. Using the play training paradigm, Saltz, Dixon, and Johnson associated cognitive development with many variables, such as intelligence quotient, story interpretation, fantasy judgment, sequential memory, and also cognitive control

over impulsivity. Saltz and Brodie looked at measures of intelligence, vocabulary, ability to interpret cause-effect relationships, problem solving, divergent thinking, and conservation. Unlike studies undertaken within other traditions, no one cognitive variable was particularly highlighted. In addition, should one of the variables not show change, cognitive development was not ruled out. Data from the Saltz, Dixon, and Johnson experiment showed that the play conditions were consistently superior to the nonplay conditions on most of the cognitive tasks, including increases in intellectual performance as measured by standard intelligence tests. Saltz and Brodie conclude that pretend play has positive effect on cognitive functioning.

Other research that appeared to fall within an empirical framework, again for its attention to a wide range of cognitive variables, was a series of pilot studies conducted by Weininger (1985), which explored the long term use of pretend play in the classroom with handicapped and emotionally disturbed children. Using a play training approach, four seriously emotionally disturbed children aged 4 to 5 years were taught to pretend by a teacher-therapist for a short period daily for seven months. Control group children, similarly handicapped, received the same program as the experimental group, except for the pretend play training. Observation showed an improvement in the trained players in a variety of cognitive skills, such as storytelling and comprehension, reading, attention span, knowledge of cause and effect, and short and long term memory. In contrast, the control group showed no such gains. Weininger concluded that the crucial difference between the experimental group and the control group seemed to be in the regular and sensitive use of a pretend play program. He called gains in the experimental group "very real achievements ... [for] cognitive growth."

Conclusion

From this review, it can be seen that while the definition of play has been reasonably consistent, there was a broad range of formulations for cognitive development. Play researchers have been concerned with defining play and with the implications of their definitions of play on their research. The suggestion being advanced here is that with respect to the consequences of play for cognitive development the same consideration has not been applied to what was meant by cognitive development.

When play researchers have found contradictory or inconclusive results, they have tended to propose minor modifications to the definition of cognitive development rather than modifications to the definition of play (Fink, 1976; Golomb & Cornelius, 1977). Or researchers have raised methodological issues, such as posttests used (Rubin, Fein, & Vandenberg, 1983), target groups trained, or type of play training provided (Fein, 1981) as possible explanations for the inconsistent pattern of effects emerging from the play research. In addition, in a definition of what constituted cognitive development, what was highlighted and given priority by some researchers was not by others. The exchange between Piaget (1966) and Sutton-Smith (1966) is an example.

In this critique of Piaget's position on play, Sutton-Smith (1966) noted that Piaget, in his study of intellectual development, had been concerned with the

> correspondence between the structures described by logic and the actual thought processes studied by psychology ... and not with those less directed aspects of adult thought usually referred to by such terms as reverie, creative imagination or divergent thinking. Yet in the opinion of some, the latter have a great deal to do with novel forms of adaptation ... if there is an intrinsic relationship between play and thought, it is more likely to be with these latter forms of divergent intellectual operations than with the directed forms which concern Piaget. (p. 107)

Both Piaget and Sutton-Smith had a common starting ground; they fundamentally agreed upon what was meant by play. Piaget, however, defined cognitive development in terms of the emergence of logical thought structures; Sutton-Smith defined cognitive development, at least with respect to play, in terms of novel adaptation.

Cairns (1983) pointed out that studies of development were crucial to the study of individual and group behavior. Shortcomings in the study of cognitive development inevitably handicap other lines of investigation. Flavell (1978) wrote with irony about the "Theory of Cognitive Development we are all waiting for" (p. 101); and currently there are a number of approaches to its formulation, none of which, according to Flavell, presents a complete picture yet. With respect to the controversy regarding the consequences of play for cognitive development, it appears that play researchers' explicit discussions and definitions not only about play, but also about their particular theoretical assumptions about cognitive development might bring further clarity to this issue.

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BOOK REVIEW

WORLD YEARBOOK OF EDUCATION 1987—VOCATIONAL EDUCATION. *By John Twining, Stanley Nisbet, and Jacquetta Megarry* (Eds.). London: Kogan Page. 1987, 318 pp.

This is the sixth in a series of World Yearbooks of Education commenced in 1981. Prior yearbooks have focused on Education of Minorities, Computers and Education, Women and Education, Research, Policy and Practice, and The Management of Schools. The 1987 yearbook entitled *Vocational Education* covers both vocational education and vocational training according to the definition provided by John Twining in the introduction. Although 7 of the 21 chapters focus on Britain, there is a reasonable cross section of world regions including Western Europe (overview), West Germany, the Netherlands, USSR, India, Kenya, Southern Africa, Brazil, New Zealand, Australia, Malaysia, Korea, Japan, United States, and Canada. Unfortunately, many of the chapters from outside Britain focus on only one narrow aspect of vocational education in that country and/or spend considerable time outlining the general social and educational structures, culminating with only a general discussion of vocational education. The yearbook also suffers from a lack of apparent structure in the planning and sequencing of the chapters; hence considerable work is required of the reader in order to go beyond the collection of papers to identify commonalties of concerns and trends.

Detailed analysis of the chapters reveals a wealth of viewpoints about the various social pressures and educational issues that are currently impinging on vocational education. Taken as a whole, the yearbook provides insight into the variety of program types within vocational education, although often these insights are from the perspective of just one or two countries. The collection of writings also identifies and discusses a wide range of current trends in vocational education. Herein lies the value of this yearbook to educators interested in and responsible for the development of vocational education in the future.

Some of the major social pressures influencing the nature and direction of vocational education identified include high youth unemployment, rapid technological change, shortage of skilled manpower, concerns about productivity, information technology, and growing dissatisfaction with high school programs. Chapters from the UK, Western Europe, and Australia especially emphasize the growing problem of youth unemployment coupled with a shortage of skilled manpower. This paradox gives rise to the identification, in many of the chapters, of the need for correspondence between training and employment opportunities. Concerns with social productivity are highlighted by authors writing of the USSR, Korea, Malaysia, and Japan. The impact of rapid technological change and the growth of information technology permeate many chapters, but are stressed in Phillip Hughes' chapter from Australia and by Harry Knutton from the UK.

Ron Johnson in his overview of vocational education in Western Europe identifies perhaps the major issue facing vocational education: the need to focus on youths' transition from school to work. This, and the associated issue of the relevance of vocational programs, is of concern in chapters from countries as diverse as New Zealand, Kenya, and South Korea. Other issues of long-standing concern relate to the balance of vocational with general education and the degree of specificity that should be planned within vocational offerings. These find expression in the offerings by Frank Pignatelli (Scotland), Ian Waitt (Korea and Malaysia) and Brad Imrie (New Zealand). There seems to be general agreement that vocational programs should strive for flexibility and breadth in programming and in the skills passed on to the graduates to increase the potential for relevance and provide the basis for career changes.

Different types of vocational education programs provide the focus for authors throughout the book. The diversity of program types is particularly evident in Johnson's review of Western Europe. One suspects that the selection of a particular program associated with a particular country was the result of potential contributors known by the editors, rather than attention being given to any special contribution that could be made to the development of the yearbook. Nevertheless, some representativeness is achieved. Secondary education programs tend to be the focus of contributions by Hughes (Australia), Pignatelli (Scotland), Marsh (USSR), and Roberts (UK). Full-time, pre-employment programs at the postsecondary level are emphasized in the submissions relating to the United Kingdom, Korea, Malaysia, and the Netherlands. West Germany and New Zealand are the settings for consideration of postsecondary programs integrated with employment such as apprenticeships. Japan is an excellent selection for the consideration of industry based programs, albeit through the eyes of an Australian. Brazil and a number of South African countries along with the UK were selected by the editors to provide some insight into issues related to upgrading and retraining. Two specialized approaches to both inservice and preservice instructor preparation are described: one in India (Banthiya) and the other in the UK (McCallum).

As previously noted, the major contribution of the yearbook lies in the perspective it offers on current trends in vocational education. The opportunity is provided to understand in more detail how similar concerns and motives are influencing a variety of program types within different cultures and social settings. The following is a brief review of these trends as discussed in the various chapters.

A major trend is an attempt to maximize transfer of learning. Transfer is especially important in vocational education to facilitate adaptability with rapidly changing occupational requirements, and to provide a base for later retraining. Curriculum development projects and suggestions aimed at the maximization of transfer are presented by various authors. Attempts to focus on "core" skills and knowledge are related by Marsh in his report on the USSR as well as by Roberts and Ward who write on approaches in the UK. Both Johnson and Longden suggest the need to identify and develop

"learning skills" which would enhance effectiveness in new situations. Roberts also reports on the International Labour Organization's project which has identified "general employable skills" and developed modules of study with these as objectives. Pignatelli (Scotland) and others suggest that transferability may be grounded in affective learnings and that we should therefore focus more on the personal development of the student in order to enhance transfer. The Japanese in-plant vocational education programs have implemented the concept of "multi-tasking" to maximize transfer.

Changes in teaching/learning strategies are another trend reported by a number of the authors. The need for more flexible programs in terms of learner access has resulted in a move toward "unitized" or "modularized" educational offerings, especially in the UK as noted by Pignatelli, Twining, and Roberts. These and other approaches are identified as ways of "individualizing" instruction. An overview of two specific projects with Brazil, which documents a shift toward significant usage of technology as an aid or medium in the provision of vocational opportunities, is provided by Romiszowski. General discussions concerning the need for changes in teaching/learning strategies are advanced by Garforth, Twining, and Knutton. Movement toward distance education as a strategy for vocational education is identified by Romiszowski, McCallum, and Knutton.

Increasing attention to the costs of vocational education is identified as an international trend. In response, the balance of the contribution expected of the individual, government, and industry is dealt with by authors from Western Europe, Canada, and Japan. Examples of changes in institutional structure and governance are provided by the Netherlands, Canada, and India where institutions have been required to increase in size, adopt marketing strategies, or alter function in order to compete for government funding.

There is a developing perception of need to evaluate and change preparatory programs for instructors. Preservice and inservice concerns of vocational instructors are discussed within the Indian context by Banthiya with a shift toward a greater emphasis on inservice opportunites. McCallum (UK) focuses on the need for training instructors in the use of technology, especially the microcomputer, both with respect to its use as an instructional tool, and as a field-based research tool enabling heuristic problem solving in a way not possible before.

Increasing attention to assessment and certification of vocational skills is identified by a number of authors. Chapters by Imrie from New Zealand and Ward, Twining, and Knutton of Britain describe improvements in assessment techniques and mounting support for arrangements to facilitate transfer of credit and reciprocity in certification. Assessment of "competence" which would overlook the time component of training, and also emphasize the demonstration of skills on the job and the application of knowledge, is also an emerging theme. The implementation of "profiles," detailing specific areas of competence to replace the traditional trade certificate, is proposed by a number of authors.

A growing emphasis on the need for a closer match between training and occupational requirements is referred to by most of the authors, especially Twining who addresses developments in this area. A detailed example of how this might be achieved is in the United States' activities in "entrepreneurship" education outlined by Ashmore. The program of the National Centre for the Study of Vocational Education provides curricular assistance to both secondary and postsecondary programs. McCallum suggests that the use of computers should improve the detailed identification of the job requirements, thus assisting in achieving a closer match as well as improving the capability of recording and storing successful achievements by students.

Retraining is becoming a more significant component of vocational education. An overview of some of the issues in retraining is provided in chapters by Romiszowski, Garforth, and Twining with Brazil, Africa, and the UK as the settings. Retraining activities are focusing on flexibility, specific learner needs, and the use of technology in individualizing instruction and in distance delivery. Computer based information systems are being used as sources of guidance regarding the availability of courses.

Marsh, in the chapter on the USSR, provides the only evidence of extracurricular activities contributing significantly to vocational education.

In summary, this World Yearbook on Vocational Education offers a useful perspective on most of the important issues and trends in vocational education. However, the opportunities for cross-cultural comparisons are few, as many of the chapters relating to countries outside the United Kingdom are specific to one narrow area of vocational education, and in some instances provide the only related discussion. For example, it is unfortunate that the contribution from the United States is limited to entrepreneurship, and that the only offering from Canada is on the use of marketing strategies in a technical institute. It is also disconcerting to note that five of the chapters purporting to address vocational education within other countries are authored either by Britons or people with extensive British experience. A more careful structuring of the book, either around evolving trends or particular themes, would also have been helpful.

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